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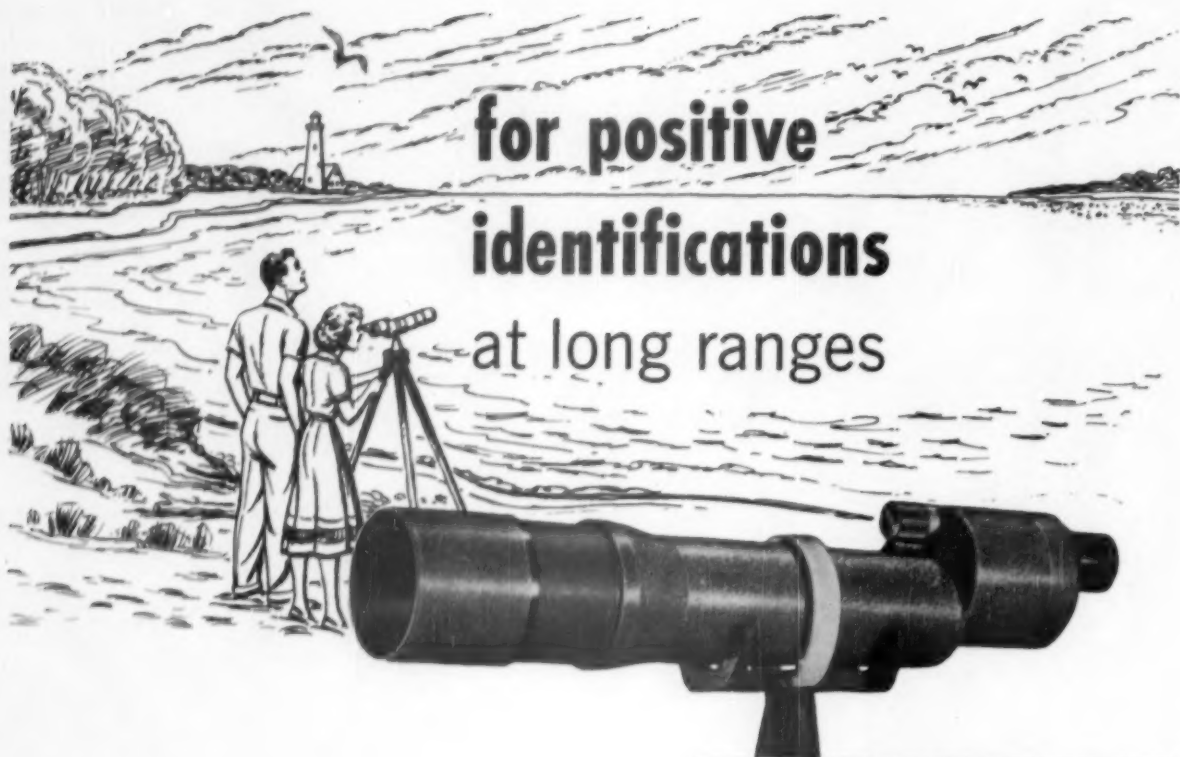
SEPTEMBER-OCTOBER 1956

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Audubon magazine

Volume 58, Number 5, Formerly BIRD-LORE

PUBLISHED BY THE NATIONAL AUDUBON SOCIETY

A bimonthly devoted to the conservation of wildlife, plants, soil, and water

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John K. Terres, Editor

Andrew Bihun, Jr., Advertising Manager • Frederick L. Hahn, Art Director

CONTRIBUTING EDITORS: Arthur A. Allen, Henry Beston, George Dock, Jr., Ludlow Griscom, Louis J. Halle, Jr., John Kieran, Robert Cushman Murphy, Mayden S. Pearson, Donald Culross Peattie, Roger Tory Peterson, Herbert Ravenel Soss, George Miksch Sutton, Edwin Way Teale.

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Letters

Camera "Tricks" Are Unnecessary

As a member of the South Florida Branch of the National Audubon Society, I was deeply interested, and more than a little concerned, when I read Roger Peterson's comments on screen tour films in the May-June 1956 issue of *Audubon Magazine*, pages 102-103. I have been "in on" all our screen tours here, and many years ago did some pioneering in industrial promotion films.

When I say it is not necessary, nor even advisable, to go "Hollywood" in our pictures I am sure that I speak for the great majority of those who witness them. The subject matter is all-important. If this is interesting, if the composition is attractive, the lighting good, and the picture in focus, there is little left to desire. Anyone who wants more will never be much of a naturalist. "Fadeouts, blends, wipes or 'zooms,'" to quote Mr. Peterson, can never add much to a good wildlife picture and can never make a poor one any better.

Let's face it: there are persons, some of them nice folk and intelligent, who are just not interested in the things that appeal to nature-minded people. We have no quarrel with them, but let's not deplete our too-meager funds in an attempt to pull them into our orbit. Our great mission is to interest the citizens of tomorrow in the beauty of the natural world, and the screen tours are doing this most effectively.

This is written in no criticism of Mr. Peterson, but rather in an effort to reassure him. All praise to him for his exciting pictures. To embellish them with Hollywood camera tricks would indeed be gilding the lily.

LEONARD ORMEROD

North Miami Beach, Florida

Shortia in Michigan

In looking over the May-June 1956 issue of *Audubon Magazine*, I saw an article on *Shortia galacifolia*. We have some here in my ravine in Michigan. My father, O. C. Simonds, planted it 30 or more years ago. It came from North Carolina. We did have three patches, but one had so many beech leaves over it that it died; the other two patches blossomed this spring. It is one of the first flowers to blossom—even before the violets.

MRS. GERTRUDE S. WALKER
Fennville, Michigan

Mourning Dove Nests on a Roof Gutter

The letter from Mrs. Esther M. Fritz in the July-August 1956 issue of *Audubon Magazine*, p. 146, prompts this letter about a mourning dove nest.

Three years ago a pair of mourning doves nested in our porch roof gutter. I was afraid the first rain would wash the nest away, but the nest (if you could call it that) was of such coarse material that the water went through it without doing any damage. By leaning out of an upstairs window I was able to get my camera within four or five feet of the nest and I got a series of pictures, beginning with the eggs and ending with a parent bird on the nest and the two youngsters on the porch roof about ready to take off.

Apparently the mother sat on the nest with the nestlings under her while she fed them, but her head was turned away from me and I got no clear picture of the operation. The only part

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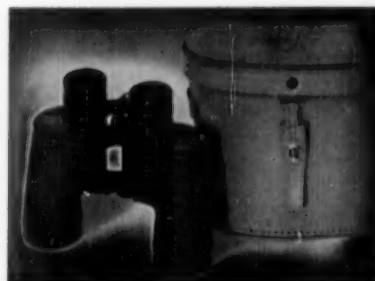
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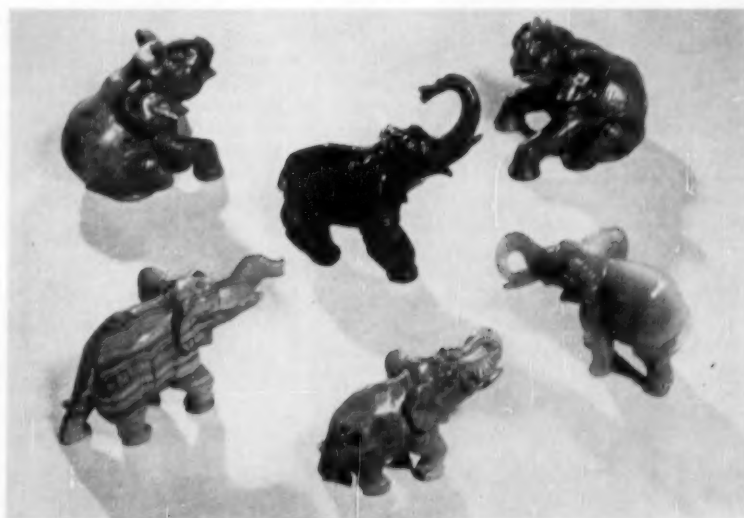
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of my activities which caused any disturbance was taking off the window screen in preparation for picture taking, but it was obvious that I was regarded at all times as a suspicious character.

ARNOLD HOBBS

Minneapolis, Minnesota

Survival of One-Legged Birds

I was interested in reading Mr. Ward's comment in the March-April issue of the *Audubon Magazine* concerning the herring gull with but one leg. I have observed a similar situation and you will find an account of my observation in *Bird Banding* 13 (3): 121-122, 1942. As Mr. Terres has pointed out, wild birds do seem to survive with a leg missing.

I published additional notes on crippled birds in the *Inland Bird Banding News* 25 (2): 7, 1953 and also 25 (6): 34, 1953. However, my earlier note is the only one including a record of the herring gull.

RALPH W. DEXTER

Professor of Biology
Kent State University
Kent, Ohio

A Salute to Audubon Camps

I write this testimony in the hope that some reader of *Audubon Magazine* will read this letter and become convinced that he should attempt to attend the Audubon Camp which is nearest to him.

I went to the Audubon Camp of Maine with the scantiest knowledge of birdlore and nature in general. I had spent almost 50 weeks of my life at camps and have never been so impressed by the quality of leadership and, probably most amazing of all, the wonderful way that these Audubon Camp leaders complement the talents of each other.

During the first session of the current season, at the Audubon Camp of Maine, I saw people from most all walks of life orienting themselves to the camp program. The campers that go out from

the Audubon Camps are the best witnesses to the work that these Audubon Society camps are doing. I am sure that I speak for the majority of the people who have had the opportunity to attend an Audubon Camp when I say, "Go and see for yourself." It's terrific!

ERWIN H. SCHRODER

Tribes Hill, New York

Bouquets for the July-August Issue

Dear Editor:

A bushel of roses to you and your staff for the July-August issue. Our editorial staff here has been exclaiming over it this morning and it seems only proper to pass our plaudits on to the source.

In addition to enjoying the material, we think you have achieved a beautiful balance in your presentation, "an aura of serenity" someone commented.

So wonderful to know there is a magazine like yours amid the maddening clamor.

GAYLE WILLIAMS

Popular Gardening
New York City, New York

The Samuel H. Gottscho story with photographs ("August in a Wet Meadow") was a beauty in the July-August issue of *Audubon Magazine*. I enjoy the quality and diversity of the magazine.

WAYNE HANLEY

Hingham, Massachusetts

Dear Miss Miller:

With some 60 years of nature guiding behind me, this octogenarian reads with critical interest your column, "Your Children," in *Audubon Magazine*. Your contribution to the July-August 1956 issue shows exceptionally good planning. The section, "Explore Your City Block," opens vistas! After 80 years, what I still find in our block!

C. M. GOETHE

Sacramento, California

An Albino Barn Swallow

A pair of barn swallows nested this spring of 1956 in the barn of the Clarence L. Hunt farm, Stone Dam, New York, and in their litter of five young ones, one was snow white. One day, while Mrs. Hunt was working in the kitchen, she glanced out of the window and saw the white swallow perched on an electrical wire. She called me on the telephone and I lost no time getting there to watch and to photograph the beautiful white bird. I was able to get within about 12 feet of it.

On looking closely at the swallow, I discovered that it was not a pure albino. The eyes, beak, and feet were black, instead of being pink or flesh-colored as a pure albino would be. The white



swallow was not popular with the other members of its family. Whenever it alighted on the wires, the others would fly up into the air, then settle back down on the wires. When they were all flying, I noticed that the normally-colored barn swallows would dart at the white one and harass it. The albino stayed around the Hunt farm for three days and then it disappeared.

NORMAN IVES

Genesee, Pennsylvania



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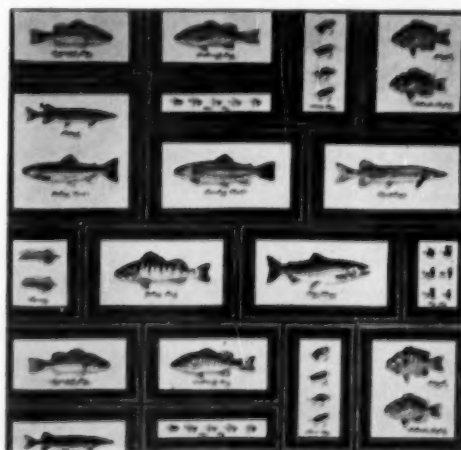
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Roger Peterson's BIRD'S - EYE VIEW

Wild Spain Revisited

FOUR years ago, in this column,* I told of my first visit to Wild Spain — Abel Chapman's Spain — the great wild area of marsh, dunes, and cistus-scrub in the delta of the Guadalquivir in Andalucía. On that occasion I went with eight Frenchmen (and Guy Mountfort). This time, in May 1956, I was to be outnumbered by 10 of my British colleagues.

Much has happened in those four years. The cattle egret which I had traveled so far to see has become established in North America. The Spanish edition of the European Field Guide, the first book of its kind in Spain, is on the presses; the Spanish Ornithological Society which Guy Mountfort and I sparked in a casual conversation with Mauricio Gonzalez, now boasts 300 members and a publication, *Ardeola*; and through this new activity conservation efforts in Spain have received a stimulus.

But, one thing in Spain I am happy to report remains the same. The Coto Donana, the famous old preserve whose *palacio* dates back to the time of King Philip the Third, is still almost exactly as Abel Chapman knew it 50 years ago. The only modern note added since 1952 is a tractor which we sometimes used for hauling our gear instead of the horses. James Fisher, impressed by the ancient cork oaks, the numerous wild boars and the herds of red deer and fallow deer (we counted 108 in one bunch), said that the Coto gave some idea of what wild England must have been like during the middle ages. He commented later, "I half expected King Henry the Eighth to ride by."

Kites seemed to be nesting in every isolated cork oak—mostly black kites, but we did find the nests of several reds. Eric Hosking, England's number one bird photographer (and perhaps the world's best) put up a pylon hide (pardon me—blind) to a red kite's nest in the top of a cork oak and we took turns photographing the pair as they came in to feed their two half-grown

young. I myself spent nine hours in this blind only 11 feet from these magnificent birds. Britain now has only about a dozen pairs of red kites, all in secluded valleys in Wales, and no photographer, not even the incomparable Hosking, is allowed to work on them. In Spain, of course, they are fairly common and we were overjoyed to document in stills and color movies this much publicized but seldom photographed species.

The number one bird on our list for photography was the Spanish imperial eagle, but we were doomed to disappointment. All of the seven nests we visited were empty save one which held one dead young one. Bad luck this season had overtaken the imperial eagle, one of the world's rare birds. Last year, however, seven young were banded. We saw at least one or two adults daily, beautiful birds with the cut of the golden eagle, but quite black with a pale crown and white shoulders. We actually saw five kinds of eagles in a single day—imperial, golden, short-toed, Bonellis, and booted—at least three of which were breeding on the Coto. Nowhere have I seen a richer variety of resident raptors. One day, while exploring the dunes of the sea, we were quite surprised to discover a peregrine's eyrie with young on the top of an old Moorish watchtower.

Field Marshall, the Viscount Alanbrooke (British Chief of Staff throughout World War II), and Lady Alanbrooke joined us for 10 days. Lord Alanbrooke, who is a keen bird photographer, spent each one of those days in a blind working on stilts, pratincoles, herons, stone curlews, and other subjects. Guy Mountfort (Secretary of the B.O.U.) devoted most of his time to still photography while George Shannon and Jerry Jamieson took color movies. James Fisher, John Parrinder, and James Ferguson-Lee (editor of *British Birds*) comprised the birding party and ranged far over the Marismas and the Coto daily to amass a total of 170 species from flamingos to such unexpected varieties as the masked shrike (two birds), the first authenticated record for Spain.

Visits to the Coto Donana are denied the ordinary bird-watcher for there are no roads to it; to reach the Coto one must travel several miles by river boat and 18 more by muleback. To sustain one's self out there requires a considerable retinue of servants, horsemen, and guardas made possible only by our Spanish hosts of the Gonzalez family, co-owners of 16,000 hectares of the 27,000 hectare tract. We hope that this paradise will long remain as it is, a wild preserve unique in all Europe, the home of the imperial eagle and many other rare birds.

The Griffons of Arcos

Although few visitors to southern Spain can hope to visit the Coto, it is quite simple to drive to the ancient town of Arcos, perched high on a cliff where in centuries long past it withstood the assaults of the Moors. Here, each afternoon, 50 or 60 griffon vultures, huge as condors, ride the updrafts amidst a wheeling, chattering assembly of 200 or more lesser kestrels.

Hosking and I engaged a big black Mercedes and a chauffeur (the only conveyance we could get) and made the journey through the vast rolling grainfields north of Jerez to Arcos. It was too late to see great bustards (the grain was too high) but we did see a pair of red-rumped swallows nesting under a culvert. Mauricio Gonzalez, who has adapted the Field Guide into Spanish, accompanied us, for he dearly loves his Andalucía and its birds. He knew, too, where the vultures soar best, and securing a key we had a balcony to ourselves for the show. It was about four in the afternoon but already many of the big griffons were tucked back under the ledges. One by one they launched forth again to face the wind and filed by at eye level in a majestic parade. Far larger than our turkey vultures, these Old World vultures belong to a different family of birds. In aspect they suggest our condor with its neck ruff. We had tried to photograph them at the Coto earlier but had delayed too long; only one Egyptian vulture visited the dead

*Audubon Magazine, November-December 1952, p. 246.

cow which we used as bait. The other vultures were no longer in the area, although two weeks earlier, shortly after our arrival, a flock of 50 or 60 including five of the rare black vultures were scouting the Marismas daily. The black vulture, by the way, is not like our black vulture but is every bit the size of our condor and is the largest bird of prey in Europe, larger even than the griffon. Unlike the rock-nesting griffon the black nests in tall pine trees. There must not be more than a handful in Spain whereas the griffon is numerous from one end of that sunny country to the other.

Second in interest only to the griffons at Arcos are the lesser kestrels which are, in essence, little sparrow hawks. Unlike the ordinary kestrel, the lesser is colonial, swarming by the dozen about every Spanish town where an old castle or fortification exists. They were like sparkling gems as they hung suspended below us, balancing on the updrafts, their blue wings contrasting with the rich reddish backs.

The visitor to Arcos rarely has the privilege of seeing the inside of the castle beyond whose buttresses and balconies the vultures soar. Here Violet Riddell, wife of the famous English bird artist, John Riddell, has lived for 40 years. Although she rarely sees anyone nowadays and remains cloistered within the walls of the castle, Mauricio Gonzalez, who had been a friend of John Riddell, gained us admission. Passing through the heavy gates we entered a cobbled court which opened out onto a lovely patio in which a serin sang in a citrus grove. Crossing to the other side, we were met by an

attractive Spanish maid who escorted us to the high-ceilinged rooms hung with many original Riddells and finally to the studio of the master himself. Each portfolio, when opened for our inspection, disclosed an astonishing versatility, for Riddell painted many subjects besides birds. I shall remember him most, however, for his studies of African big game, painted at a time when Africa was wilder than it is now. We never did see Mrs. Riddell but on descending the stairs from the studio found a delicious English tea waiting for us. It was after 6:00 when we went outside again to take a final crack at the soaring vultures with the Bell and Howell and the camera gun.

—THE END.

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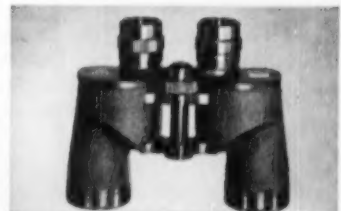
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"The Long Valley" is a chapter from Mr. Teale's forthcoming book, "Autumn Across America," to be published October 15, 1956, by Dodd, Mead & Company. The pre-publication of this chapter is by permission of the author and publishers.

"Autumn Across America," following Mr. Teale's "North With the Spring," is his second volume of a planned, four-volume series which will be a continent-wide survey of the natural history of the four seasons. —The Editor

By Edwin Way Teale

STANDING in the autumn sunshine amid the lichen-spattered jumble of Tuscarora sandstone at the top of Hawk Mountain, in eastern Pennsylvania, we had watched in other years a parade of soaring migrants. On set wings the hawks had drifted or scudded by. They rode as on an invisible tide that swept them down the long ridge in a great curve toward the south. The trail they followed was the same autumn pathway their ancestors had used long before the *Santa Maria* crossed from the Old World to the New. It was a trail that, all down the Endless Mountain, provided supporting updrafts that enabled southbound hawks to cover hundreds of miles with scarcely a wingbeat.

As the migrants had grown small in the distance we had followed them in imagination. We had pictured the invisible sheets and columns of rising air on which they soared. We had felt, in fancy, the thrust of the updrafts against outspread wings. We had debated how they steered their course, choosing the aerial path best suited to their needs. We had conjured up the scene that unrolled beneath them as they sailed on and on down the length of the Great Valley, through five states, keeping to their ancient pathway through the autumn skies.

These things we had imagined. Now imagining was past. That morning my wife, Nellie, and I had taken off in a light plane from the Harrisburg airport. Now the ridge curved away—green below, blue in the distance—beneath our wings. Now we experienced at intervals the hard up-drive of the invisible air currents. Now we were seeing, as the hawks saw, the forested wall of rock, the patchwork of valley fields moving past below us. We were following, for a hundred miles and more, the aerial road of the hawks.

In a long curving climb Johnny Abiuso's green-bodied, silver-winged Beechcraft Bonanza had carried us up to 3,000 feet above Harris-

burg. Beyond the left wing—with "N8568N" painted in black on silver—I could see the shining serpentine of the Susquehanna flowing down its corridor through the ridges. Smoking factory chimneys, rows of red- and green-roofed houses, the sooty spider web of a railroad yard steadily grew smaller below us. Like an expanding ring on water the horizon pushed back as we climbed.

At two miles a minute we headed north. Looking like some Roman aqueduct in the distance, the longest stone arch span in America, the railroad bridge over the Susquehanna at Harrisburg, drifted away behind us. Ahead, out of the hazy distance, the curving green waves of parallel ridges a thousand feet high dragged their immense lengths across the landscape—Blue Mountain, Second Mountain, Peters Mountain—with the titanic furrows of the valleys between. We crossed over the first ridge. High above it the plane lifted and dropped on swells of bumpy air, disturbed by the updrafts.

This easternmost of the ridges—the Endless Mountain or Kittatinny

THE LONG

The author, Edwin Way Teale, seated on the Tuscarora sandstone boulders at the top of Hawk Mountain in Pennsylvania.



Ridge of the Indians, now officially called Blue Mountain—swings in an arc from east central to south central Pennsylvania. It is the most eastern of the Appalachian chain. Its towering wall of sandstone forms the escarpment of the folded Appalachian mountains. Under various names, bordering the Great Valley, it extends almost without a break from New York's Shawangunk Mountain, on the north, to Mt. Oglethorpe, in Georgia, on the south. Down the Pennsylvania length of the ridge, in former times, ran the Tuscarora Path of the Shawnee Indians. Today, the most famous of modern footpaths, the Appalachian Trail, follows its crest. And in the

air—unmarked and trackless, far older than the Tuscarora Path or the Appalachian Trail—the road of the hawks parallels the ridge.

"When the wind is strong," Abiuso told us, "especially when it blows from the northwest, it is really rugged up here."

At such times the same winds that fill the pocket of Cape May strike the Kittatinny Ridge at right angles and shoot upward in a powerful ascending flow. The greatest hawk flights occur on such days between late August and mid-November. Then, Abiuso says, he flies high not only to be above the turbulent air but also to avoid hitting the hawks. The weight of a golden eagle or one

of the larger hawks would be sufficient to damage a wing or shatter a windshield. Mostly the hawks fly low. But once, when mist hid the ground, he came abreast of a large flock of Canada geese winging south at an altitude of more than 4,500 feet.

As the warmth of the morning increased the sky over the valley was sown with small cumulus clouds. To escape the bumps of the heated rising columns that formed them, we climbed to 5,000 feet. There we rode in a tranquil sky. We flew north, curving toward the east as the ridges curved. Across the valley below, where the cloud-shadows moved, the fields of the farms varied endlessly in shape and size and color. They seemed, viewed from the air, laid out haphazardly without rhyme or reason. Yet behind each boundary line lay the logic of topography, the weight of legal decision, the chance of inheritance, the story of expand-

All photographs by the author.

VALLEY

"As the migrants had grown smaller in the distance we had followed them in imagination."



ing success or contracting misfortune.

The forested ridges were green now with only here and there an isolated splash of color. But all down their lengths, a few weeks hence, they would be gaudy with the vivid, lavish hues of autumn foliage. Far below us, along the skirts of the Kittatinny Ridge, we caught glimpses of lonely little farms snipped from the forest. At long intervals the path of a power line ran in a narrow, cleared band up and over the top. And, as the summit of this Endless Mountain moved past below our right wing, curious openings began appearing in the forest. They were sometimes square, sometimes rectangular, sometimes curving. Occasionally they turned back upon themselves. They looked like hieroglyphics or Mayan ruins on the ridgetop. They puzzled us at the time. Abiuso said he had begun to notice them only a few years before. Later I learned their meaning. The clearings were made by the Pennsylvania Game Commission to provide feeding areas along the top of the ridge for deer, wild turkeys, and other forms of wildlife.

We passed Indiantown Gap and the dark Swatara River, Pine Grove and Summit Station. Hamburg and the gray line of U. S. Highway 22 lay to the southeast as we passed over the nestling village of Dreher'sville and crossed the coal-laden Little Schuylkill River. Then suddenly the white, tumbled sandstone of the Hawk Mountain lookout burst into view. A dozen persons stood among the rocks. Their binoculars swung in our direction. This was Hawk Mountain as tens of thousands of migrating hawks had seen it.

We cut in above the ridge and curved back, skimming out over the lip of the 1,000-foot drop. Three times we circled the promontory. Many a hawk, I remembered, had seen that rocky height we looked down upon as its last sight on earth. Within the space of this tight circle of our plane, passing hawks had been blinded, blown to pieces, maimed, or with a shattered wing had fallen through space in days when the Tuscarora slabs bristled with shotguns. Here, at this world-famous sanctuary, hawk-watchers have replaced hawk-gunners. But this promontory is but one of 11 points along the Kittatinny Ridge

where the passing migrants were shot for sport. And only here has the killing stopped. The shooting still continues at all the other 10. A succession of sanctuaries, a chain of Hawk Mountains running the Pennsylvania length of the ridge, is needed to halt this autumn slaughter.

As we curved away, straightening out for the return flight, we waved to the hawk-watchers.

"If they don't see any hawks today," Nellie said, "they can put down two migrating Teales."

As a matter of fact, Maurice Broun, curator at Hawk Mountain since it was established, told us later that on that September day, 83 hawks passed the lookout. Forty-nine were broad-wings, six sharp-shins, two red-tails, four marsh hawks, three ospreys, and 17 sparrow hawks. Represented by single individuals were the bald eagle and the peregrine falcon.

Flying south, down the path of the migrants, we studied the air currents. We cruised along the summit and at either side. We vaulted back and forth over the top, first from one direction then from the other. Abiuso, long experienced with the air currents of the hawk ridges, showed us where the upthrust was strongest. This came not at the exact summit but a little back of it. When a north-west wind strikes the wall of the ridge it shoots up and over in a vaulting arc. The current thus deflected sometimes rises into the sky as much as four times the height of the ridge. Beyond its high point this comber of the air drops in a swift descent. A lightplane pilot, inexperienced in the region, may narrowly escape crashing into the treetops when caught in the grip of this powerful downdraft.

On this day the breeze was light and mainly from the north. We passed—and saw in fleeting glimpses—hawks soaring down the ridges. On such days of little wind the birds tend to follow a path farther out over the valley where the thermal currents rising from the sun-heated fields give them added lift. But whether a hawk is riding on thermals or slope-winds it is always gliding downward. The spiraling bird that mounts on set wings up and up into the sky is really descending all the time through the air. It is circling on a downward corkscrew path

within a column of air that rises faster than it descends. It is like a man walking slowly down the steps of a rapidly rising escalator.

In the fall of 1942, Maurice Broun and Ben V. Goodwin timed the speed of passing hawks over a two-thirds-of-a-mile course at Hawk Mountain. Fourteen species and 152 individuals were clocked by the two men. Their soaring speed ranged from 16 to 80 miles an hour. The average rate of speed for all the hawks was 30 miles an hour. The holder of the top record was an osprey. It was soaring south in a particularly powerful updraft. Without losing altitude the bird was, in reality, diving steeply all the way.

Most of the time the hawks avoid the more violent, turbulent updrafts. In their long slide down the ridge that stretched away before us, I suspect that they set their course through rising air that will enable them to glide at normal cruising speed, so to speak, without losing altitude. Always nosing down, always using the motive power of gravity, they adjust their soaring speed by the steepness of their glide. I have watched red-tailed hawks cross the slight gap before Hawk Mountain and then, as they reached the stronger updrafts of the ridgetop, tilt slightly downward and increase their speed without loss of height. By employing the air currents that will carry them upward at the same rate that they descend the migrating hawks ride for hundreds of miles down the valley with altitude unchanged.

The wing-loading of hawks, the relation of weight to wing surface, is a factor in their speed and in the strength of the updrafts needed to support them. Among these birds this element varies considerably. When Earl L. Poole, some years ago, published in *The Auk* the weights and wing areas of various American birds, his figures showed that a goshawk may have a wing-loading nearly twice that of a sparrow hawk and a peregrine falcon three times that of a marsh hawk. Oftentimes on days of strong winds—when the birds fly lower and closer to the ridge—the migrants pass Hawk Mountain soaring with wings partially closed, adjusting their surface and wing-loading to the conditions of the time.

Out over the valley, when we were

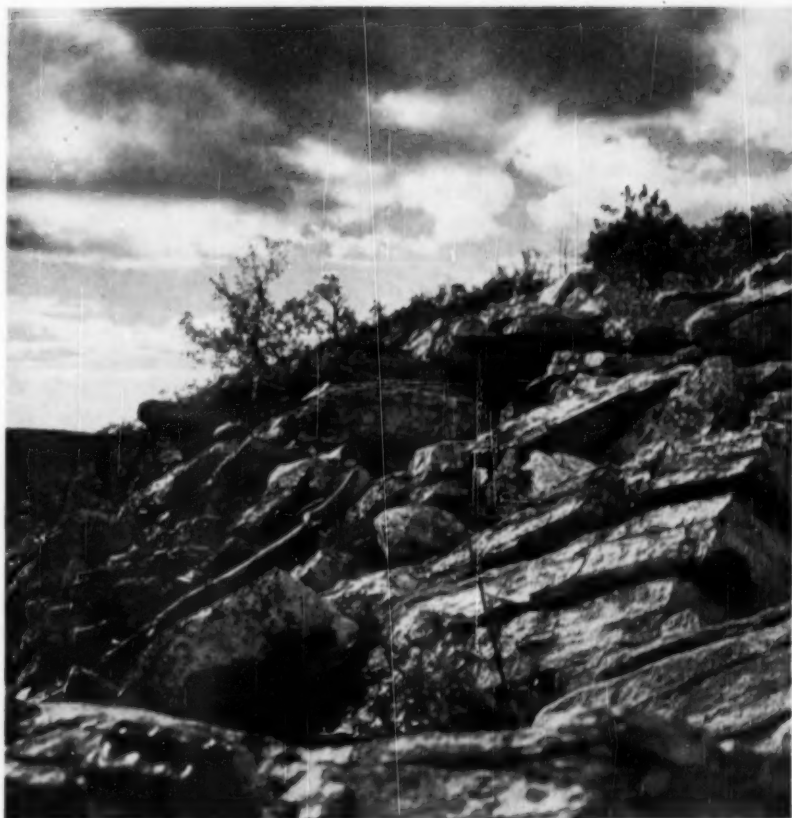
halfway down the ridge, we saw one of the most lightly loaded of all the soaring birds, a turkey vulture. It rocked and turned among the thermals a full 1,500 feet above the ground. Even feeble updrafts will carry these broad-winged birds aloft. From one rising current to another they make long, shallow glides across the sky. But on days of heavy winds these lightly loaded birds are at a disadvantage. They lack the weight to give them ballast and stability.

A bird in the wind—that, to the average person, is one of the most confusing aspects of avian flight. "It is a well-known fact," a reader wrote in the correspondence column of *The New York Herald Tribune* in the summer of 1955, "that birds rest, when possible, by letting the winds carry them along." And in a U. S. Department of Agriculture bulletin, published in 1935, there occurs the sentence: "Even strong winds that blow in the direction of aerial travel are unfavorable for the birds, as they interfere with their balance and disarrange their feathers." Both these statements are based on a fundamental misconception of the relationship of the bird and the wind. They are derived from the viewpoint of the ground rather than from the bird's viewpoint in the air.

A bird does not drift through the sky like a thistle seed, or a gust-blown piece of paper. It does not float on the wind as a chip drifts downstream on water. It does not rest on the air; it flies by moving through it. It must maintain a certain minimum speed to support it. This it achieves either by the muscular effort of moving wings or by using the power of gravity in gliding—which becomes soaring when the air around the gliding bird is moving upward as fast as or faster than the bird moves down. Only during the comparatively infrequent instances of hovering and when fluttering down to a landing does the bird drop below this minimum forward speed. It maintains it whether flying with or against the wind. And in either case its speed *through the air* is the same.

For a bird in the wind is like a man in the coach of a speeding express train. The car may be rushing over the rails a mile a minute. Yet as the man looks about him within the coach everything is standing still.

Continued on Page 238



"We had conjured up the scene that unrolled beneath them as they sailed on and on down the length of the Great Valley."

"Now imagining was past . . . the ridge curved away—green below, blue in the distance—beneath our wings. . . . That morning we had taken off in a light plane from Harrisburg."



I LIVE WITH A BLACK-TAILED JACK RABBIT



Illustration by Walter Ferguson.

By Henry Paul Jackson

WE live in a house in Soquel, California, that is mostly glass, and the rabbit's name is Harveya. Of course, it was *Harvey* when she was given to me, a baby probably less than a week old, abandoned or lost in a farm field. Folk doubted I could raise her, but that was 12 months ago and those who know her agree with me that she is one of the nicest pets one could have, and I am very proud of her.

If I seem to boast in telling how I saved her life, house-broke this beautiful little wild creature, and almost domesticated her—forgive me, for my desire is to share with others my wonderful experience with an animal that, at least in the country where I live, is usually considered—along with the many cottontails—a pest.

HARES AND RABBITS

Many people confuse hares with rabbits not realizing that they are different animals. The name rabbit should be applied only to the cottontails, genus *Sylvilagus*. Hares, *Lepus*, which include, in this country, the varying hares, arctic hares, and jack-rabbits, have longer ears and longer hind legs than rabbits, and their digestive tracts are different in structure. When hares are born, their eyes are open and their bodies are well-covered with fur; rabbits are born naked, or without fur, and have their eyes

closed for a week or more after they are born.

The black-tailed jack-rabbits are generally recognized as of three species in this country — *Lepus californicus*, the subject of this article; *Lepus alleni*, and *Lepus gaillardi*. These three have white tails, of which the upper surface is more or less black; they live in the Far West and Southwest, from Oregon east to Central Nebraska and Western Missouri, and southward through Texas, Arizona, New Mexico, California, and into Mexico.—The Editor

By good chance there was a doll-bottle handy, and Harveya co-operated at once by taking the nipple and emptying it of half-diluted and warmed homogenized milk; shortly she would take seven bottles at a feeding three times a day. Then I recalled that rabbits love carrots. I added carrot juice to her diet, and she grew rapidly. (She will not eat carrots.) Amazingly, her ears grew faster than her body! And for a time I wished I had called her "Ears." When she was only about half-grown, the ears were much longer than their

mature size of six to seven inches. I remembered how the young calf is "all legs" and yet becomes proportionate in size when it has grown. So has Harveya, in the full form of her kind, with beauty of line and of movement, from the tip of her black-topped tail to the silky, nearly translucent black-tipped ears that she can turn, semaphore fashion, independently in different directions, and which seem to catch a whisper, or high notes, easiest.

When Harveya was a small hare, I had to house-break her. This

seemed impossible until it occurred to me that urination was after the sixth bottle; accordingly, for several feedings, with this bottle I brought her to a sandbox, which she would use at once; then she received the seventh bottle in the box. One day to my surprise and delight, she went to the box on her own and then I knew the problem was solved. It must be said, however, that as she has the run of the house—a glass-enclosed area of a thousand square feet—she hops much at night, especially when it is moonlight. Then she leaves some droppings outside of her box, but almost always in the immediate vicinity, at least on the paper surrounding it.

From the first I permitted her to sleep where she wished, and she chose to stay beneath my bed. Thinking that the floor was too cold, colder even than the ground where a jack-rabbit sits, I gave her a thin but firm pillow, which she adopted. But one day I could not find her, and thought someone might have left a door ajar to the outside. While sitting on the couch I happened to glance up. To my surprise, there sat Harveya on the shelf at the end of some books. Like a bronze statue she sat, her ears erect, nearly touching the shelf above. That night she didn't return to my room, so I took her pillow to her. For about three weeks the book-shelf was her favorite resting-spot—night or day. It was interesting to see how she got up so high: she would jump to the couch, then to a pillow, and then to the first shelf. About this time she was inclined to scratch on the pillow or on a vacant place near it to make her "form" (in the wild, a slight depression in the ground). When she discovered she could not scratch out a place, she would finally straighten out the pillow with her teeth and settle down. This scratching out a form has now practically ceased. Then came the day when with her ears raised, she touched the shelf above. Evidently, she did not like this. One night, instead of bounding up on the shelf, she remained at the corner of the stone platform which forms the base of the large, three-cornered fireplace where she sometimes sat. I carried the pillow to her, and to this date, this is her favorite spot to sit when I am at home.

By this time Harveya had traveled more than 5,000 miles with us in our car, on the same pillow, on the rear seat or lying on the back of the front seat. She attracted attention wherever we went. She loves to ride in the car if she has her pillow, for this seems to give her a feeling of safety. She stretches out like a dog on it and remains perfectly contented. Her box is always near her on the seat, and she has never soiled the car.

She had learned to drink early. She was so amusing, when she stood on her hind legs and put her paws into my free hand to brace herself while sucking on the bottle, that we babied her long after it was necessary. Learning to eat, though, came slower. First she nibbled grasses and then only when I poked the end of a blade into her mobile mouth. Finally she sampled and liked rabbit pellets. Later, we discovered that she liked "quick" oat flakes, apple, and, especially, dark bread, toasted and dipped slightly in skim milk. The last of these, usually with carrot juice and in small amount, is now her "goodnight" treat. She eats daintily and invariably leaves part of it, returning to it later.

When she was first sampling solid foods, to our amazement, she seemed to try everything. After she discovered that some solids were tasty—she ate raffia off the Chinese chairs, wood from the fireplace, paper boxes, and even clothing, with a threat to the rugs. One night, while we were traveling with Harveya, she was left to roam about our room in the motel. I had hung my favorite pair of slacks over a chair in the motel. In the morning, after dressing I discovered that my slacks were full of holes! The holes were of various sizes, all made by Harveya. For a few moments I thought of abandoning her, but there she sat, with her innocent, hopeful expression which, since she has no voice (excepting a heavy *Phfft!* used only when she is angry), indicated she was waiting for her morning bottle. Of course, I forgave her. Fortunately, this was the end of her sampling of articles other than edibles, but her natural curiosity over everything about her is one of the things that makes her so interesting to us.

From babyhood, Harveya washed her fur as a cat does, but she was several weeks old before it was so

completely or thoroughly accomplished as she does it now. She even washes her tail, which shows great flexibility of her body. She finally finishes by cleaning her ears, and this must be seen to be believed. She pulls each ear down, with her feet, and does not release the ear until she is quite satisfied with her handiwork.

Speaking of her flexibility, her various postures have been, to me at least, as unexpected as they are interesting or artistic. Her usual or conventional one, of course, is at rest seated with her slender front legs close together. Her large brown eyes in her narrow little head, are inconspicuous in contrast to the ears. Her ears she holds erect so long as she is alert—thus she commonly sits on her fireplace pillow awaiting the breakfast call, for all the world like a judge silently passing judgment on her world. As soon as she sees activity in the kitchen area, which is visible from her seat, she moves to a place near the refrigerator, where, with her front legs usually withdrawn, she settles down, apparently, until the toast is ready. But she seldom actually insists—she just places herself in a strategic position where her motionless silence is expressive, pathetic, and successful! Only if I am seated, or if there is an exceptional delay, does she scratch or pull lightly on my trouser cuff.

After her morning clean-up, she relaxes, with her ears dropped (scarcely discernible against the shoulders). But she only *seems* to be asleep. At the approach of a strange person, or if she hears an unfamiliar noise, she is away like a flash. She bounds to a box on the floor of my clothes closet, where the door is always left ajar so that she may nestle deep in the old slacks (which she no longer chews), with only her pressed-down ears visible. There she remains until her sense of danger is past. But if no untoward incident occurs, around noon will find her stretched out in, perhaps her most intriguing position. One day a friend of mine, also a friend of hers, was sunning himself on the sun lounge, a place preferred by Harveya. When Harveya decided she wanted the place, she took his shirt in her teeth and gave it a shake. When he got off the lounge, in response to her urging, she settled on

Continued on Page 227



The heronry near King Williams Town, along the Buffalo River.

By C. J. Skead

The Cattle Egret in South Africa

All photographs by the author.

I HAVE read, with great interest, reports in the July-August and September-October 1953 issues of the *Audubon Magazine*, which outlined the colonization and spread of the cattle egret on the South and North American continents. In view of this, it is significant, I believe that the colonization of the southernmost parts of the African continent by cattle egrets, has paralleled the spread of the bird in the Western Hemisphere. Their increase in South Africa has been most noticeable since the late 1920's and early 1930's. Whereas it had previously been

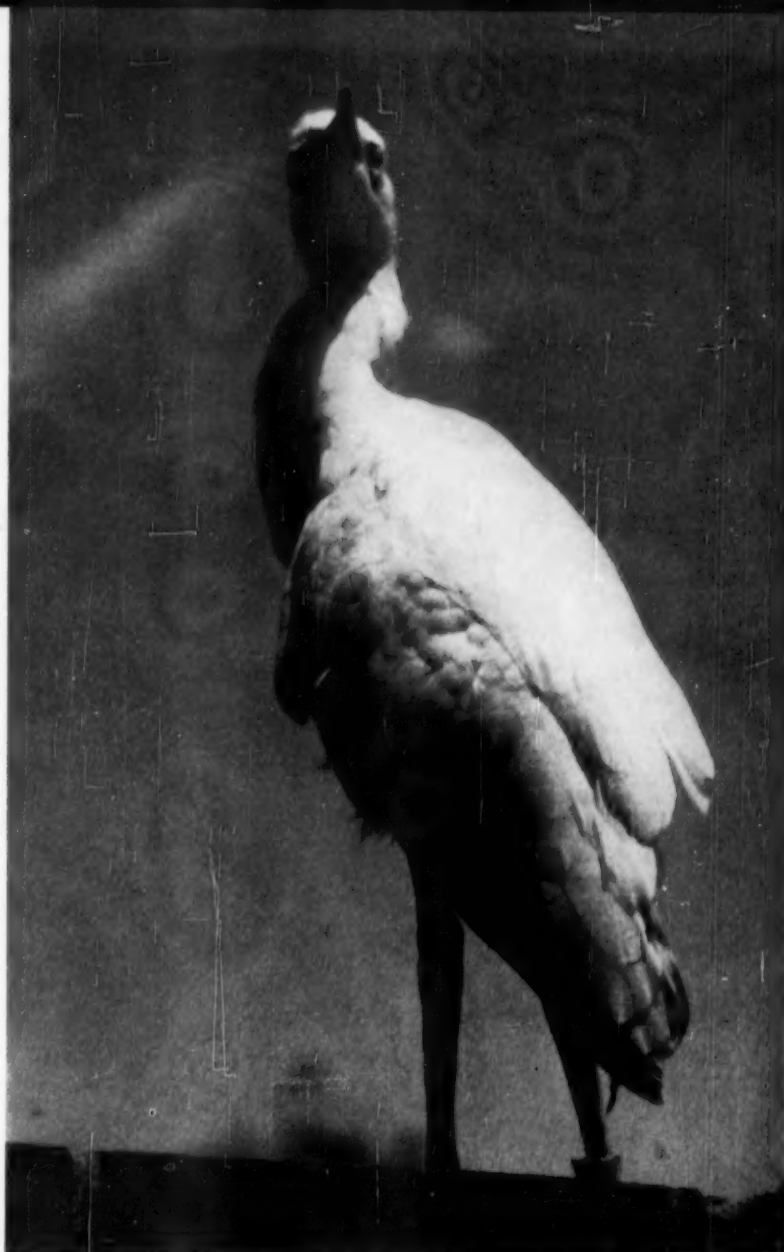
known as an irregular wanderer in most parts of the Cape Province, with certain exceptions, it is now a well-known bird in many districts. One wonders whether the spread to the south in Africa and the spread to the west across the Atlantic have anything in common.

I have had the opportunity of studying this bird at close quarters at a heronry of some 2,000 to 3,000 birds in a eucalyptus plantation on the banks of the Buffalo River. The heronry is in the village of King William's Town, South-East Cape,

With the rapid increase and spread of the African cattle egret, *Bubulcus ibis*, in North and South America, we believe our readers will be interested in this report of the cattle egret's nesting habits in South Africa. Biologically, the courtship and nesting behavior of the cattle egret in Africa is probably little different from what it is in America. As far as we know, no nesting studies have yet been made of the cattle egret in the Western Hemisphere. We hope that this study will suggest what to expect of the cattle egret's nesting behavior in the United States, and that it will be of valued assistance to future studies of the bird in this country.—The Editor

→ This photograph of one of the author's young captives shows the position of the cattle egret's eyes when using its "binocular vision" to look downward or straight ahead.

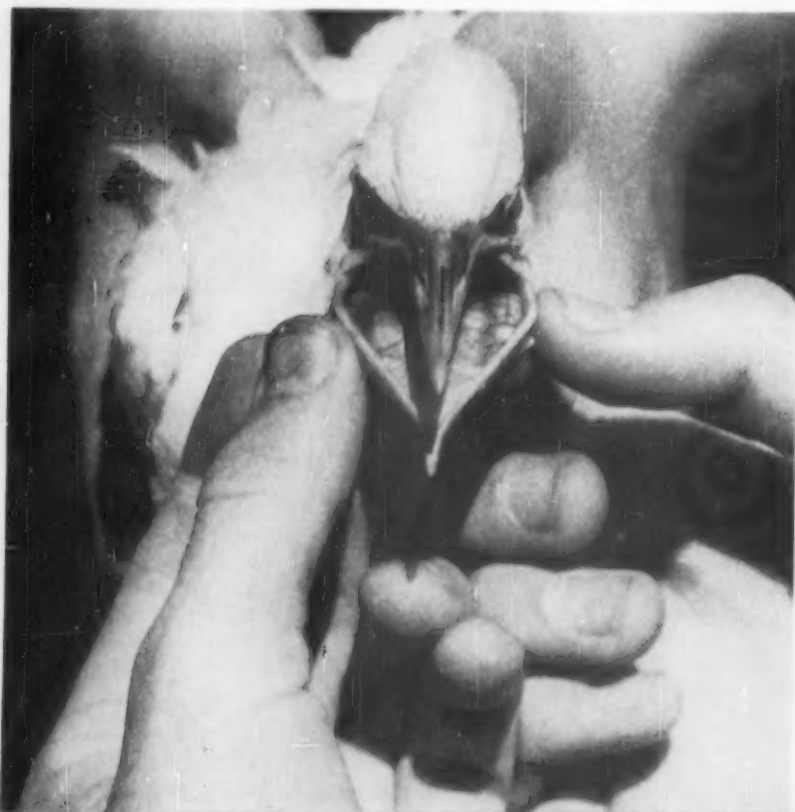
↓ Cattle egrets, or buff-backed herons, feeding near cattle, King Williams Town, South Africa.





Close-up of some of the 700 nests in the cattle egret heronry along the Buffalo River. The nests are placed closely together in these eucalyptus trees.

Photograph showing the gape, or spread, of a young cattle egret's mouth.



where I live. The cattle egrets, *Bubulcus ibis*, nest in tall trees at a height of about 50 to 80 feet and up to 700 nests are built in the colony each year. The breeding season lasts from September to January, which is spring and early summer in our Southern Hemisphere. During the off-season, or winter, the birds are always to be seen on the veld and pastures around the town, and they return to the roost at the heronry each night. Some years they roost in the trees in winter, and some years they cross the river and roost in the tall reeds on the river bank.

Courtship of the Cattle Egret

At the approach of the breeding season in September, some birds retire to the trees by early afternoon. One bird takes up its position on a branch, or perhaps on the remains of last year's nest, and leaves no doubt that it is the possessor of that

position. It is petulant and aggressive towards intruders and its attitude is so attractive to other cattle egrets that four or five may collect on the branches near at hand. The established bird parades, aggravatedly, to and fro on its branch, with its feathers ruffled and dorsals raised. It also vigorously shakes with its bill any twigs or leaves within reach. It stabs the air with strong lunges in the direction of the other birds, but these give no sign of being especially interested in the performance. Now and then one of the intruders will fly towards the performing cattle egret. This only stimulates it to a more frenzied outburst and it attacks the intruders viciously and drives them away. With these lunges, it gives a characteristic call—a nasal "thonk," which is peculiar to this display.

This sort of thing persists for a few days until one of the intruding birds is accepted by the owner of the branch and the two engage in reciprocal "love-making." In this they grab each other's dorsal-wing-

feathers or nape-feathers and gently shake them or run their opened bills through the wing-feathers, and crane their long necks over each other's backs and fondle the opposite wing. Even now there are outbursts of rage, and fights, but these soon subside. In time, reconciliation is complete. It is presumed that the "owner" of the branch is the male, with females trying to reach him.

Nest-building

Nest-building takes place at the original site. The irascibility disappears and the "thonking" notes subside. One bird is always on guard at the nest-site while the other is away collecting sticks for the nest. The incoming bird hands the stick to the ensconced bird, which places it with care. It has been noticed that the birds from the many nests tend to do their collecting of nest material, all at the same time, and such a spell is followed by a long pause in the work with the birds remaining on the nests. As far as can be

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About the Author

Mr. C. J. Skead, Director, the Kaffrarian Museum, King Williams Town, Cape Province, South Africa, has written many papers for ornithological publications—for *The Auk*, *The Ostrich*, and *The Ibis*—about his studies of the Cape weaver-bird, Cape canary, black-collared barbet, Hadedah ibis, South African hoopoe, the cuckoos, the honey-guides, black-sunbird, crowned plover, and many others. He worked in close cooperation with Dr. Herbert Friedmann of the Smithsonian Institution, Washington, D. C., in Dr. Friedmann's preparation of his recent bulletin, "*The Honey-guides*," published by the U. S. National Museum.

Mr. Skead has written us that his main interest is the studies of as many life histories of South African birds as is possible. His article in this issue of *Audubon Magazine*, about the South African cattle egret, was based upon intensive studies of the egret colony over a period of three years. —The Editor

Some of the author's pet cattle egrets. These were young birds that fell or jumped out of their nests, and would have died had they not been rescued.



FENCE Lizards

By Frank F. Gander

ONE summer day while nooning under my oak tree,* I amusedly watched a male fence lizard which strutted about atop a large granite rock near me. Raising his body on straightened and stiffened legs, with his back arched, and his throat puffed out, he bobbed grotesquely about. The bright blue of his throat and the two bands of blue along the sides of his belly showed nicely; his back was dark-gray with flecks of blue-green showing here and there, and along either side were indistinct gray lines. Occasionally the lizard would interrupt his display to move to the edge of the rock and snap up small flies that had drawn near. Several of these were hovering about in the shade of the tree, and whenever one came near the rock, the lizard got it—not once did he miss.

Flies and other insects constitute most of the food of the fence lizard, but they do not eat just any insect that comes near. Instead, they show much discrimination in selecting their food. They ignore most bees and wasps, but occasionally an adult male lizard will take a bee if he has opportunity. They eat some ants, others they do not touch, although they will eat ant pupae greedily. I have watched a fence lizard stand beside a moving column of ants and deftly snatch the pupae from the ants as they carried them along. Apparently some ants are quite distasteful to these lizards. On one occasion, an ant had attached itself to a mealworm which I had tossed to a lizard. The lizard ate the mealworm, ant and all. Instantly the actions of the

little reptile became comical. He blinked his eyes, held his mouth wide open, and put one forefoot up against his throat. Altogether, he acted like a person who had taken a bite of food that was too hot.

When ants are winged, or in their flying stages, they do not seem so repugnant to lizards and are eagerly captured by them. The lizards eat flying termites, too; grasshoppers and their allies, moths of many kinds, small caterpillars, some beetles and their larvae, aphids, and many other kinds of insects. Spiders, small scorpions, and some other arthropods also are included in their diet. Occasionally I have seen a fence lizard eat the blossoms of wild snapdragons and the fallen petals of roses. Plant food may be of some importance early in the year when insects are not very abundant.

Usually, the adult fence lizards in my garden begin to come out of hibernation about the end of January. Young of the preceding season do not hibernate but are active on sunny days throughout the winter. Even with the thermometer at 50° F., if the sun is shining these little lizards will be lying out on the rocks. They continue to grow all through the winter, and most of them are nearly grown and ready to start reproducing by early summer. The young males are very active and aggressive, and though the older males are larger, they have to engage in frequent battles to protect their territories and mates from the younger males.

When two males are fighting, they circle warily about each other, each trying to grab the other by a forefoot. If this hold is secured, the successful lizard then flips over on its back and thus throws its opponent clear over itself to land with a thud upside down. The thrown lizard never seems to be hurt by this maneuver and may eventually win the fight. If opportunity offers, a fighting lizard will grab its foe's tail and try to snap off that appendage, but I

have never seen one succeed in doing so. This, it seems to me, indicates that probably lizards have some control over the ease with which the tail is broken.

Fence lizards establish territories much as birds do, and they dispute over boundaries in much the same way. Strong or especially aggressive males may have several mates, each controlling her own small portion of his larger territory. The females are smaller than the males and are usually a lighter shade of color, but both sexes change the intensity of their coloring so frequently that sometimes the female of a pair will be



Illustrations by
Walter Ferguson

* For an account of the author's garden and plant nursery near Escondido, California, see, "Getting Acquainted with Birds in a California Garden," *Audubon Magazine*, November-December 1956.

The fence lizards described by the author in this article are probably the western fence lizard, *Sceloporus occidentalis biocinctus*. It ranges through southern, central, and western California, north to southern Oregon and southern Idaho, throughout Nevada, and in extreme western Utah. It is considered the most abundant and conspicuous reptile, in its preferred habitats, in southern California.—The Editor.

IN MY Garden

darker than her mate. Most adults are very dark when they first become active on cool mornings, perhaps because this dark hue absorbs more of the sun's rays and thus helps them to warm up faster. Some dark individuals have spots of dull red on the back.

While the individual may vary greatly in color at different times, there is also some variation between individuals. Two females that frequented the same cement-block wall were slightly different in size. The larger one was always light-gray in color while the smaller one was quite dark. These both belonged to the same male, and all three of these lizards became very tame. They would come into my hand to take mealworms, and if I sat in a chair near them, they would come and climb over me in hopes of being fed.

Many lizards about my garden have become tame enough to feed from my hand, and I have found them exceedingly alert and interesting creatures. Repeatedly they have shown me that they recognize the whole of me as an individual, and when I offer a mealworm in my hand, they look into my eyes before accepting or declining the bait. Those that refuse to come to me usually turn away so that the tail is pointing at me and then vibrate this very rapidly. I have never been sure of the significance of this act but have seen it in more than one species.

Fence lizards recognize the dangerous creatures in their environment just as readily as they distinguish those which are acceptable as food among the smaller ones. One day I tossed mealworms one at a time where they would be equal distances from three creatures—a male fence lizard, a female granite spiny lizard, and a bird—a California thrasher. Neither lizard had any fear of the much larger bird and would even snatch mealworms right out of its beak if the thrasher was not alert to prevent this. Yet I have seen these

same lizards seek safety when they saw a roadrunner approaching 50 feet away. Both the thrasher and the roadrunner have rather long legs, long tails, and long beaks, but the lizards do not confuse the two birds. One is to be feared; the other is not to be feared. Nor do they show fear of any of the other birds around my garden except the jays. Jays often hop after lizards, but I have not seen them catch one. Roadrunners, how-



ever, feed on lizards regularly, and so do sparrow hawks or kestrels, but sparrow hawks do not come into my garden.

Probably some fence lizards are eaten by house cats, skunks, opossums, and such creatures, but these prowlers are active mostly at night

Fence Lizards

Fence lizards, or swifts, of the family Iguanidae, genus *Sceloporus*, live in many parts of the United States. One group, *Sceloporus undulatus* and its subspecies, includes the northern and southern fence lizards, and the prairie and plateau lizards. These little reptiles are usually from two to three inches or more long, from the tip of the nose to the end of the body. This does not include the long tail which may be as long, or twice as long as the body length in some species. The western fence lizard, *Sceloporus occidentalis biserialis*, which is the subject of this article, is a different species from the eastern fence lizards, but superficially it resembles the eastern forms, and its habits are much the same. Its body is about three inches to three and one-half inches long; the tail may be three or four inches long.—THE EDITOR

when lizards are snugly hidden away in small crevices. A few dormant lizards and small ones may be discovered and eaten by shrews. But next to the roadrunner, the most serious threat to the fence lizards in my garden are striped racers and king snakes. Both of these snakes hunt lizards. One day, I watched a fence lizard that was in turn, watching a foraging racer. The lizard was the same shade of gray as the granite rock on which it was perched, and it remained completely motionless as long as the snake was near. Fence lizards also fear some others of their tribe, such as the whiptails and alligator lizards which eat smaller lizards.

Each female lays several clutches of eggs during the summer, and the earliest broods of young may be half grown by the time the last ones hatch in the fall. The eggs are somewhat larger than navy beans, oval, leathery-skinned, and when first laid appear creamy-yellow from the color of the yolk within. They are laid in the earth where it retains some moisture but also gets warmth from the sun. Time of laying depends upon the weather, and some years the first eggs may be laid as early as May. Baby fence lizards first appear in my garden in late July, and others hatch out at intervals until about the end of September.

In 1955, the first matings that I saw were on March 28. There was much chilly weather after this, during which the lizards were dormant, and I could not determine just when the eggs were laid. As I have observed to be usual with most lizards, at the time of mating, this female was already quite distended by the size of the ova she was carrying. For about a month I saw her occasionally on warm days and noticed that she was getting heavier and heavier, and then I failed to see her again. Possibly a roadrunner caught her, for during this same period, her mate lost his tail.

This dropping-off of the tail is a

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Mushrooms and toadstools — saprophytic fungi that live on dead or decaying plant materials—are one of the most interesting groups of plants in the world. Some have great beauty; many are edible; and all have some useful function. The author calls them

FUNGI—



FRIENDS of the FOREST

By Donald H. Clark

FORESTERS may raise their eyebrows and brand as heretical the suggestion that fungi are their friends. Colleges of forestry teach identification and control of tree-destroying species, and it's a matter of record that almost 10 per cent of our American forest crop is killed, damaged, or degraded by fungous attacks. Few foresters, however, give serious thought to the fact that we wouldn't have any forests if it were not for omnipresent fungi which reduce dead timber and forest litter to essential humus on the woodland floor.

Without the sanitary services of fungi, the original forests which immigrants found on our continent would have accumulated forest debris from decade to decade until the huge unaltered woodpile was ignited by lightning or by an aboriginal campfire. The resulting conflagration would have reduced the forest and its topsoil to a sterile desert!

While certain fungi are justly accused of killing trees, those attacks are mostly on over-mature, decadent stands which now are diminishing in volume and importance as we advance to younger managed forests. And under future forest management, tree-killing fungi should be reasonably controlled.



View in the rain forest of Olympic National Park, Washington. Photograph by Margaret McKenny.

← The fragile *Mycena epipterygia*. Note what appears to be a slug on the stem, and an insect on the cap, of the mushroom at the left.

Morchella esculenta, one of the morels, an edible mushroom.



Daedalea unicolor, a disintegrator of woodland stumps.



One of the poisonous fungi is this *Amanita muscaria*.



Fungi, disintegrating a huge fallen tree in Olympic National Park, leave the roots of a hemlock tree above the forest floor. →



The shaggy mane, *Coprinus comatus*, not only breaks down forest debris, but is good to eat.



Even under the most competent management, however, forests will need fungi, which with the help of bacteria and insects will continue to convert stumps, tops, leaves, fallen limbs, and cones into the blanket of humus which protects tree roots, retards water run-off, and eventually becomes integrated with mineral soil.

For every destructive species, there are at least a score of saprophytic fungi which constantly produce mulch from useless wood. Some species act in a dual capacity, as does

Armillaria mellea, a destructive tree-killer but also a disintegrator of stumps and of dead and useless timber. Its cousin, *A. ponderosa*, is a saprophyte which lives on decaying wood, and incidentally produces a choice edible mushroom that grows commonly in Pacific Northwest coniferous forests. So abundant is this esculent product of forest waste that local Japanese collect and sell it by the ton each year.

The coral fungus—*Hydnum coralloides*—also doubles as a forest

sanitarian and food supplier. Its saprophytic activities, especially in dense Engelmann spruce forests, accelerate the decay of stumps and dead roots, of which the end product emerges in the form of large tufts of interlacing edible branches. Competition for this forest delicacy is so keen that, unless it is collected within a few hours after its emergence, insects and rodents will have beaten the human mushroom hunter to the draw.

The fruiting bodies of nearly every

Amanita pantherina is supposed to be even more toxic than its cousin, *Amanita muscaria*.



This cone of a Douglas fir is being broken down by a tiny saprophyte, *Collybia albipilata*.



forest saprophyte, in fact, furnish food for some forest habitant—bear, deer, rodent, bird, or insect. One exception is *Daedalea unicolor*, a rapid and efficient destroyer of hardwood forest debris, whose sporophores are too tough to be eaten by man or beast.

Two other saprophytes—*Amanita muscaria* and *A. pantherina*—are instinctively avoided by forest birds and other animals because of their extreme toxicity, although they're occasionally eaten with fatal results by mammals of the genus *Homo*.^{*} *A. muscaria* has been used in insecticidal solutions, while its pantherine cousin is even more lethal when taken internally.

To atone for these two killers, northwestern forests supply the animal kingdom with two delicious edible fungi — *Coprinus comatus* or "Shaggy Mane," and *Morchella esculenta*, the popular "morel." These grow in profusion on sheep bedding sites and corrals which are numerous on most high-altitude forest stock ranges. Bushels of morels and shaggy manes may be collected on a single bedding ground after an early autumn rain.

The fruiting bodies of two species of *Mycena—epipterygia* and *galericulata*—are unbelievably fragile, but each species is a potent destroyer of waste forest wood. The latter works on decaying wood only, while the former specializes on dead branches

^{*} Eastern red squirrels often eat the deadly *Amanitas* without being harmed by them. Perhaps other mammals, besides red squirrels, may eat mushrooms that are poisonous to humans, without suffering any harmful effects.

—THE EDITOR

and masses of fallen leaves. Another fragile wood-destroyer, which forms huge clusters of fruiting bodies on old stumps, is *Coprinus micaceus*. Few forests in the United States are without its sanitary services.

One of the most minute and fragile forest saprophytes of the Pacific Northwest — *Collybia albipilata* — is ultra-discriminatory in its selection of a host. It not only specializes on coniferous cones, but confines itself to those of Douglas fir.

A fairly reliable forest hygrometer, as its name implies, is furnished by the saprophytic *Geastrum saccatum*. This "Earth Star," growing in the forest debris of open woodlands, splits its outer peridium into numerous segments which spread downward in moist weather but retract upward around the spore-bearing inner peridium when humidity becomes low.

"Fairy Rings," ephemeral invaders of grassy plots, meadows, and forest glades, are produced by another saprophyte—*Marasmius oreades*. Its mycelia spread in an almost perfect circle from an underground accumulation of decaying plants, forming ever-widening circles with each generation of sporophores. Its economic value is probably far less than the enjoyment this mushroom gives to children in proving to them that fairies really exist.

Bacteria and insects materially assist saprophytic fungi in decomposing forest litter. Wood-boring beetles carry fungus spores into dead tree trunks and stumps. On the debit side of the forest ledger, however,

they often carry such spores into living trees, as in the case of *Dendroctonus* beetles boring into pine and *Pseudohylesinus* beetles burrowing into white firs.

When those bark beetles approach populations disastrous to the forests, woodpeckers of many species mobilize to control the insects by chiseling through the thick outer bark for the succulent larvae.^{*} The lively tattoo of woodpecker battalions in beetle-infested pine forests is music to the ears of foresters.

Other insects which collaborate with wood-destroying fungi are species of scarab beetles. They bury balls of manure which contain deposited eggs, and which often also contain fungus spores. The spores germinate rapidly under such ideal conditions.

A working example of forest sanitation by fungi may be seen in Pacific Northwest forests which were logged in the wasteful days of "high-stumping." When virgin timber was plentiful and cheap a generation ago, loggers usually felled the trees from "spring-boards" notched into tree trunks at distances of from 6 to 20 feet above the ground. Not only was it easier to cut trees well above the flaring bases, but also it was less work to saw and chop from spring-boards than from the brush-infested ground.

These enormous stumps still occupy a large portion of the forest floor in old cuttings, preventing reproduction of trees by natural

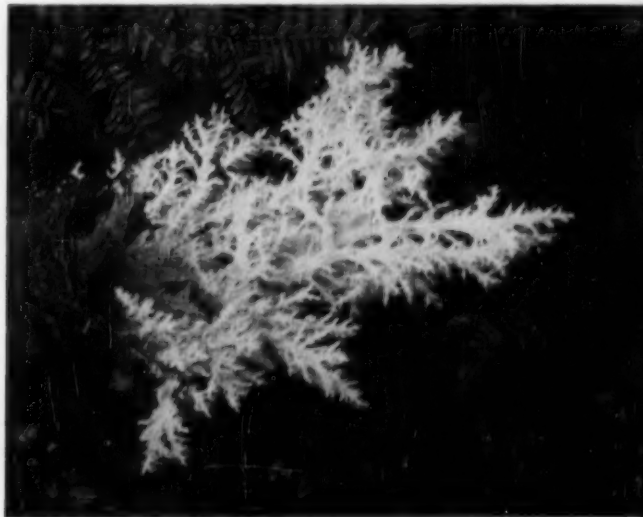
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^{*}See "Beetle Rout in the Rockies," by Harold Olson, *Audubon Magazine*, January-February 1953 issue, pp. 30-32.

Armillaria ponderosa specializes in the destruction of forest litter under stands of pine trees.



A variant of *Hydnum coralloides* produces a fruiting body that is one of the handsomest in the forest.



THE PRESIDENT

Threat to Whooping Cranes

A proposal that wild whooping cranes be trapped, or otherwise caught, in order that they may be held in captivity, with the hope of successfully producing young in captivity, and thus assure preservation of the species, is meeting with approval on the part of some ornithologists, biologists, and wildlife managers. This constitutes, in our opinion, a serious threat to the survival of the whooping crane in the wild. Your Society is strongly opposed to any such project. We believe that the best chance of the whooping crane's survival in the wild is through their production of young in the wild. They have demonstrated over a 17-year period that their mortality ratio is lower than that of most bird species; that the gain in their total numbers constitutes a surprisingly high percentage.

As far as any zoo or aviary supply is concerned, we believe that should be obtained through young that may be produced by the existing captives. We do not believe that any success would be apt to result from any future liberation in the wild of young whoopers that might have been successfully reared in captivity. We are for keeping the wild and captive supplies separate.

As far as assertion of title to the captives by the federal government is concerned, we doubt that that should be made the basis of any demand for change of present custody, but we think it is important that the government be in a position to prevent any commercialization of the captives, whether by sale, trade, loan, or gift.

We certainly feel that the present custodians should welcome the best available advice. We do not think that the decisions as to the program for the saving and promotion of increase of wild whooping cranes should be taken out of the hands of the governmental agencies that have been, up to now, and still are, primarily responsible for them.

It has also been suggested that a committee of experts be formed. We see no harm in the existence of such a committee provided that its powers be purely advisory and it have no authority to interfere.

Pressure on Little Brown Cranes

The Regional Office of the U.S. Fish and Wildlife Service in Albuquerque has for some years been bringing pressure on the Department of the Interior to permit an open hunting season on little brown cranes in New Mexico, on the grounds of claimed crop depredations. In the past several years the Department has refused to yield to such pressure. If it did, in our opinion, its so doing would be a calamity. There has been no open season on any kind of cranes since enactment of the Migratory Bird Treaty Act in 1918. The Canadian Wildlife Service, which contends with similar claims of crop depredations by little brown cranes in the prairie provinces of Canada, has been meeting the situation through

the granting of local killing permits, if investigation has demonstrated that the extent of depredations warranted some control. If it is true that depredations by these cranes in New Mexico and West Texas justify some local control, it should, in our opinion, be taken care of through the killing permit procedure and not by the creation of an open hunting season, which involves an indiscriminate and inefficient method of control. Moreover, once such an open season is established in New Mexico and West Texas, there would undoubtedly ensue demands for comparable open seasons in other western states in which the little brown crane occurs in numbers, and no doubt claims of crop depredations would be made. Those favoring the hunting proposal stress there should be no open season in any area frequented by any of the few remaining wild whooping cranes.

Our opposition to the proposal is based primarily on the fact that not only is there no appreciable pressure from hunters for the privilege of shooting little brown cranes, but that, if the Department were to yield to the proposal, it would further fortify the fast growing impression that under its present administration it is less interested in its primary obligation to safeguard migratory game bird resources than it is in finding seeming justifications for maximizing opportunities to hunt them.

Waterfowl

Official reports are to the effect that the flight in all flyways this fall will be just about the same as it was last year. Therefore, it is expected that there will be no changes made by the Department of the Interior in the length of the open seasons, the bag and possession limits, the opening and closing hours, or the framework of outside dates October 1-January 15 within which the several states may choose to elect either split or straight seasons (this as applied to the bulk of the waterfowl). There are two means, however, by which the volume of kill may be considerably increased, and there is ample pressure from the flyway councils (organizations of sportsmen in each flyway) for the granting of exceptions to state boundaries and authorization of what are known as "species harvests." Both, in our opinion, are indefensible on any other grounds than mere killing opportunity. Your President has for years listened to many proposals based on desires to kill more waterfowl, presented from the angle that state lines do not happen to be located in such a way that the hunting regulations are best suited to most efficient "harvesting" of the crop of waterfowl. He has ventured to suggest, with tongue in cheek, that the President of the United States be requested to convene state governors to consider redesignation of state boundaries in order to facilitate maximum harvest of waterfowl. Each flyway council at some stage wants the privilege of an open season on species on which the season is closed, or on those species which it claims exist

REPORTS TO YOU

By John H. Baker

President of the National Audubon Society



in surplus quantities, are "under-utilized," and should be specially "harvested." Some flyway councils want these privileges on a partial, and some on a whole, flyway basis, depending upon whose ox is gored.

If the Department of the Interior sticks to its primary obligation under the Treaty and Act to safeguard the resource, it can resist these pressures successfully, but once it begins to yield here and there and subscribe to the theories of under-utilization, harvesting and artificial adjustment of state boundaries to promote hunting, it becomes an appeaser devoted increasingly to the promotion of more liberalized hunting opportunity as its main objective.

You will remember that several years ago the Department put an end to the provision that red-breasted and American mergansers, severally or jointly, might be taken daily in the amount of 25 birds, as well as possessed to that extent, and added them to the list of other ducks with the regular bag and possession limits. It was our recommendation at the time that there be no open season on the mergansers, and that their local depredations, when and if serious, be controlled through the killing permit procedure. There has been considerable objection in New England and in the State of Washington to their inclusion in the regulation bag and possession limits with other ducks, and there is great pressure being brought to set up again special bag and possession limits for these mergansers; presumably on the basis of a daily bag of 5, and 10 in possession. There is no appreciable pressure from hunters to kill mergansers as game or for food. No utilization of a resource would be involved in any open season on them. The granting of such a season by the Department, whether as part of the regular or special bag limit, represents nothing more than yielding to prejudice based on a preferential interest; all because mergansers do eat, among other things, trout and salmon. There are, however, many other causes of death of trout and salmon, and there is absolutely no proof that the number taken by mergansers has any effect whatever on the number of salmon returning up the rivers and streams each year from the ocean to spawn. The wood duck season is to remain closed in the Mississippi Flyway, and credit is due the Mississippi Flyway Council for its expression of desire to maintain a closing hour for waterfowl shooting at a half hour before sunset, whereas it is at sunset in the other three flyways.

The Pacific Flyway has asked for a species harvest on coots and gallinules for 105 days ending March 10. The assumption is that the gallinules are included simply because hunters cannot tell a gallinule from a coot. Granted that there may temporarily be an excessive number of coot in winter in parts of California, and that their depredations on crops may be considerable, we again feel that that kind of situation should be handled through the killing permit procedure and not through the creation of an open hunting season, which,

incidentally, would run some two months beyond the end of the legal waterfowl hunting season. It has been admitted that, under the killing permit procedure in the past, the volume of kill of coots has exceeded that during an open hunting season on them, and is, therefore, preferable from the standpoint of efficient control. The manifest reason why coot control through open hunting season is relatively unsuccessful is that most California hunters are simply not interested in hunting coot. That the Department of the Interior should so regulate as to try to encourage and educate them to do so seems utterly inconsistent with its primary obligation under the Migratory Bird Treaty.

Good News on Flamingos

The flamingo warden at Inagua, Bahamas, reports this season an annual nest mound count of 7,244, representing over 14,000 nesting flamingos. This is a most gratifying increase.

The Republic of Cuba has renewed for another 20 years its flamingo protection law. The principal problem in this connection in Cuba is the development of public sentiment in outlying areas in support of that law and its enforcement. It is, therefore, very encouraging to learn that in July four men were arrested in the province of Camaguey who had more than 500 flamingos on a ship ready to leave for the United States, where the birds were to be sold for \$25 a pair. The judge fined them and sent them to jail for 30 days, and himself set the birds free in the same spot where they had been caught the day before. It is interesting to observe that it was disclosed that a public official supposed to protect the birds and a navy officer were involved in this business of attempting to sell flamingos. We are informed that the action taken by the judge in this case has aroused widespread favorable public reaction and newspaper comment in Cuba.

New Fish and Wildlife Set-Up in Washington

The commercial fishing industry has been fighting hard to get federal control of its operations away from the U.S. Fish and Wildlife Service, and in fact, away from the U.S. Department of the Interior. It has also wanted federal financial aid. A battle royal developed, and your Society held with other national conservation organizations, in representations to the Secretary of the Interior, that federal control of fisheries, whether of sport or commercial character, should certainly remain in the Department of the Interior. The upshot was enactment of compromise legislation, which creates an additional Assistant Secretary of the Interior for Fish and Wildlife; also creates the office of Commissioner of Fish and Wildlife, and sets up under his jurisdiction, subject to the supervision of the new Assistant Secretary, a Bureau of Commercial Fisheries and a Bureau of Sport Fisheries and Wildlife, each with a separate director;

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FOOD HABITS OF LONG-EARED OWLS

All photographs by Harvey Crose, unless otherwise noted.

Long-eared owl with a white-footed mouse. Photograph by Henry Gilbert.



The story of a biology teacher who let his students discover their own science project in a nearby woods.

By William B. Stapp*

ONE December day our science class of Cranbrook School, Bloomfield Hills, Michigan, entered a small grove of pines and spruces to study one kind of winter environment for animals. A student looked curiously under a drooping evergreen and then picked up a two-inch oval object that resembled "matted felt." I took it from him and explained to the group that it was called a pellet—that it contained the undigested parts of animals eaten by an owl, such as hair, feathers, and bones. I told the students that the pellets had been regurgitated, probably by an owl or a hawk, as only a few other birds follow this habit of disgorging.

When I carefully removed the outer coating of fur, we found within the pellet a well preserved skull of a mouse. This was an opportunity to explain to the group the part that owls and hawks, through their food-habits, play in the "balance of nature," and why many states legally protect birds of prey. A further search of the area disclosed a long-

*The author, instructor in biology and general science at Cranbrook School, Bloomfield Hills, Michigan, is also faculty adviser of the school's taxidermy club. While at the University of Michigan, Mr. Stapp was captain of the wrestling team and president of the Letterman's Club. He is presently a director of the Detroit Audubon Society and is instructor of nature activities in summer at the Audubon Camp of Maine.—The Editor.

earred owl perched two-thirds of the way up in the dense foliage of a Norway spruce. Before we left the area that day, we found many more pellets, probably dropped to the ground by roosting owls.

The following day, the students were in our science classroom well before the bell rang. The pellets were distributed over newspaper-covered tables and each student was given a pair of tweezers. Before long 60 skulls had been separated from the hair matrices. We got Dr. William H. Burt's book, "The Mammals of Michigan," and used its mammal key to identify the skulls. Dr. Burt, himself, confirmed my identifications of the species of animals whose bones were in the owl pellets.

Later we discovered that three-long-eared owls were responsible for the pellets. Here was an opportunity to study these birds in their roosting area. Our science class picked up more than 1,200 pellets in the evergreen grove from which we identified 1,000 skulls of small animals that the owls had fed upon. The results of this analysis gave us the percentage of the small animals eaten by these owls and a good indication of some of the small rodents that live in this area. Out of the 1,000 skulls we found 950 field mice, 33 white-footed mice, 8 short-tailed shrews, and 9 birds (6 English sparrows, 2 juncos, and 1 cardinal). The birds were identified by comparison with the bird-skull collection at the Museum of Zoology, University of Michigan.

Then came the most interesting part of our project. Upon clearing the ground of all pellets we realized that we were in a position to check the area at regular intervals to determine how many pellets were regurgitated each day and the number of animals eaten per owl. It was at this time that we realized that the pellets were dropped at the base of the roosting trees between the hours of 4:00 p.m. and 7:30 p.m. Daily information was recorded on tabulation sheets. These records included the time of day pellets were found, the species of tree or trees in which owls were roosting, and the number

Some of the students hold up a portion of the skulls of small mammals that were eaten by the long-eared owls. These, and other indigestible parts of the animals eaten, were in the pellets ejected by the owls. →



A student finds an owl pellet on the snow under a grove of evergreen trees.



Left to right: skulls of 950 field mice; 33 white-footed mice; 8 short-tailed shrews; and 9 birds (six English sparrows, two juncos, and one cardinal).

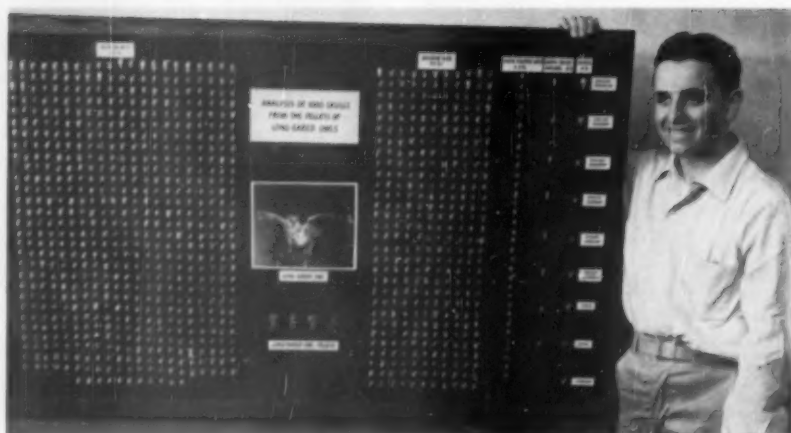


of pellets. The pellets were then brought to the laboratory to be weighed and measured.

As a project for the Michigan State Science Fair one of our students built a display case and mounted the first 1,000 skulls that we had analyzed to indicate to the public the percentage of animals eaten by the long-eared owl. Another student delivered an assembly talk on the value of owls.

This project was extremely stimulating and educational to our science class. It is a type of a project that could be carried out by any school science class, nature club, Audubon Junior Club, Boy Scout group, or other youth organization. The study emphasized to our entire school the value of owls. Also, it stimulated a great deal of interest in natural history and presented an opportunity for field research.

Further pleasure and stimulation were added to our efforts by being



Carl Haven entered his owl pellet display board in the Pontiac (Michigan) Science Fair. It won the grand prize in biology exhibits.

able to sit in the classroom and to smile at each other when we heard the crows and the blue jays squawking in the evergreen area. We weren't clairvoyant, but our acquired knowledge of birds and their behav-

ior told us exactly what was happening in the grove. We winked at each other because we knew that the crows and jays had discovered the owls—the object of our study.

—THE END.

The author (center) showing Jeff Mitchell (left) and Todd Williams (right) the differences between the skull of a field mouse and of a white-footed mouse.



ascertained, only one bird gathers the sticks and the mate on the nest places them in position. These are either picked off the ground or pulled from trees.

The nest is a mass of criss-crossed sticks with a shallow saucer-depression on top. It is about 18 inches in diameter and about 9 inches deep. It is in two parts, a lower substantial layer of larger sticks, and the shallow, upper layer of flimsy sticks and green material. One nest that I examined contained 200 large sticks and 61 small twiglets. Though they will tolerate other egrets on the branch near the nest, the nest itself is "holy ground." Thus, the circumference of the nest is virtually the extent of each pair's territory.

Incubation

Both sexes incubate the eggs, which are pale blue, and two or three in number. When one bird is on the eggs the other one is away feeding. A spell of brooding by one of the egrets may last up to three hours. When the "away" bird returns to the nest it alights in the tree and makes the normal call of "rick, rack, rick, rack..." and then it "tight-ropes" along the branches towards the nest. The sitting bird reacts by standing up, ruffling its feathers, and making the "rick, rack" call in reply. Often it adds to the ceremony by remaining seated and extending its neck, with its beak pointing skyward. Then it utters a chattering "k-r-r-r-r," as it withdraws its head into its body. It may also fiddle idly with the sticks around the edge of the nest. Sometimes the incoming bird "nibbles" the sitter's feathers with its bill or nudges it gently with the top of its head to persuade it to get off the eggs. Often the change-over takes place without any ceremony.

Care of the Young

Immediately after the eggs hatch the behavior of the adults is the same as during incubation, that is, one bird remains on the nest while the other is away seeking food. The incoming bird feeds the young ones on arrival. After about a week the adults leave the young untended, but even then they brood the nest-

lings for short periods of times. Occasionally the incoming adult bird fondles the sitting adult bird, and there may be interchanges of calls but this is not so noticeable at this time.

When the parent is feeding the chick, it lowers its bill into the nest and the shuffling chicks reach upward trying to get to the bill. A chick's opened bill grasps and partially covers the parent's bill at right angles, and the parent pushes the contents of the bolus of regurgitated food into the chick's opened mouth. The extension of the gape of the lower mandible of the young egrets is great, and it forms a ready envelope to receive the food. Despite this there is a spillage of food at this stage, but when the chicks are satisfied, the parent picks up the spilled food from the bottom of the nest and swallows it.

As the chicks grow they are able to take all the food from the adults, but with growth, they become so boisterous and excitable that their flailing wings and bouncing movements endanger each other. Consequently birds are bumped out of nests and fall to the ground where they are ignored by their parents. Animosity between the nestlings at feeding time is tremendous. Stronger birds stab their nest-mates with considerable force and cause them to move off the nest on to the branch until their older brothers have been satisfied. Older chicks leave the nest-platforms between feedings by the adults, but when they see a parent coming in (they have an uncanny sense of knowing which is their own parent) they dash back to their own nests and are fed there.

There is a definite "peck-order" in the nest. "Peck-order" was most noticeable in the captive young birds which we brought home for rearing after they had fallen out of the nests. On one occasion we had eight in an old chicken-run and one was completely dominant over the others. When he left another took over.

Behavior of Captive Young

Our captive birds proved most interesting. Even the smallest nestlings, so young that their quills were only just emerging from the skin and still very unsteady in their move-

ments, could catch with the greatest precision flies which alighted within reach. Youngsters, which would still be in the nest and therefore still dependent on their parents, could poise, point with their bills, wave their necks, and stab at their prey as to the manner born. They were so young that they rested heavily on their tarsi and abdomens, and their toes were in a continual state of gripped tension. When a bird was handled it pumped vigorously with its legs, trying to grasp something firm—our clothes, our hands, or the back of a chair—and having gripped, it held so firmly that its claws had to be pried open to induce it to release its grip. Such is obviously necessary to allow a firm grip on the sticks of the nest-bed, but as soon as the growing bird is able to stand properly this tensing of the legs and feet disappears. Their first attempts at walking are most comical. Each places each foot down with deliberation, and often covers the toes of the other foot, which trips the bird and sends it sprawling forward.

These young birds, placed on free range in our garden, would fiddle idly with sticks. One would pick up sticks and dip them into a fishpond. A friend who reared three young egrets that had fallen out of the nest found that each of the three kept religiously to its own colored feeding bowl (one was red, one was green, and one was white).

For the most part our pets had free range in the garden when they were old enough to walk and fly. They were never molested by cats and dogs, in fact our house cat was terrified at the sight of them. We used to feed them on the lawn and in addition they would feed themselves on grasshoppers and other insects which they caught in the garden. When able to fly, they would go beyond the confines of the garden fence out into the street or into the open grassy patches in the neighborhood, but they always returned in the evenings for food until they were able to subsist entirely on what they caught themselves. Thereafter they ceased to return and presumably joined the parties of egrets which roost at the local heronry.

They seemed to behave similarly at the heronry. I had noticed that the older nestlings began to leave the nests and to forage not far from

Continued on Page 224



"The first-born chick hatched on May 29 . . ."

By Robert Wagner

LIFE for whooping cranes, as for all wildlife, is a perilous business. Tragedy appears to stalk, with unusual persistence, even Josephine and Crip, the captive cranes at Audubon Park Zoo in New Orleans. Three times they have attempted to rear a family, and three times they have failed. This past spring of 1956, they appeared to be on the way to success for Jo had laid two eggs instead of one. True, the second of the two chicks that hatched had disappeared when less than two days old. The first-born chick, which hatched on May 29, thrived, however, and it grew like a weed. Its survival seemed assured.

It seemed almost impossible that anything tragic could befall this voracious and absurd little crane. It had grown to be an ungainly youngster with long legs and tremendous feet that always seemed to be in its way. Its plumage was of an almost uniform cinnamon color, although variegated by some buffiness. Its legs were orange-brown, unlike the black legs of the adults. Its beak, too, had an orange hue, and its eyes were brown, whereas the eyes of Jo and Crip are a vivid yellow.

The chick had been born in surroundings that are a striking contrast to its natural breeding grounds in the wilderness of Canada. Its one-acre enclosure, in a yard behind the Audubon Park elephant house, is only a short distance from the Mississippi River. In the sultry New Orleans heat, the prevailing sounds are the shouts from a nearby baseball diamond, the incessant chattering of the

This is a report on the life and death of the third whooping crane ever to be born in captivity.

LIFE WITH THE CAPTIVE WHOOPING CRANES

All photographs by Wilfred D'Aquin of the Times-Picayune (New Orleans) newspaper staff.

mockingbirds, and the occasional calling of a cardinal. The young whooping crane and its parents seemed indifferent to the sparrows quarreling over tidbits of food provided for the cranes, and to the occasional American chameleon—the only creature with energy in the oppressive heat—that scampered swiftly over the brush or a tree. The young bird tired much more quickly than its parents. Frequently it dropped on its haunches, and settled itself under the foliage of the big camphor tree in its enclosure, to avoid the blazing rays of the sun. The young crane seemed always hungry, and even when the youngster tired of following its parents about, the adults continued to forage for it, digging up the earth with a powerful side-to-side movement of their beaks that often scattered a shower of earth several yards in either direction.

In addition to the shrimps and crabs that the zoo keepers gave the adult cranes, Crip, the male parent, snatched up everything else in sight, showing a special fondness for earthworms. At intervals a keeper would moisten the earth with a hose "to bring the worms closer to the surface for them." At one time the parent cranes were seen molesting a small turtle, although they had no success in eating it. The turtle was later removed and found to be dead, with its legs and head hidden within its shell. It was identified as a mud turtle, *Kinosternon subrubrum*.

Jo and Crip fed many of the food morsels they found to their youngster. When the bird was younger, they would often break up their catch first if it were



"When the young bird tired, it dropped to its haunches."

too large for the baby crane. They held the food, usually an earthworm or an insect, in their beaks, and allowed the bird to peck at it. Sometimes they dropped an insect on the ground in front of the young one and prodded the insect to make it move. Then they stood and watched as the chick plucked it up. This apparently was their way of teaching the bird to feed itself, a skill the chick had no difficulty in mastering.

Crip, the male bird, provided for the youngster much more consistently than did Jo. However, both were equally wary of animal intruders. "They saw everything that moved," as the keeper phrased it. According to the keeper, Jo, the female whooping crane, dealt severely with an interloping squirrel that quite innocently scampered down a camphor tree into the domain of the cranes. Jo seized the squirrel at about the middle of its back with her powerful beak, then shook it two or three times and dropped it. The squirrel, when released, clambered hastily to the topmost limb of the tree, from which it gazed down at the big crane with wide, frightened eyes.

At a sign of anything unusual, the cranes would suddenly stiffen, and swing their heads about, their yellow eyes glaring warily. Crip had a way of stretching his neck, at such times, and pointing his beak stiffly earthward. All of this was very satisfying to George Douglass, director of the zoo, who recalled vividly the disappearance of the other chick, within two days after it was born. He was not aware that a subtle agent was at work on this first-

born chick, against which the vigilance of Jo and Crip would also be of no avail.

For weeks it had been observed the young bird would sometimes open its beak wide, often while sitting down, and appear to swallow the air. Perhaps everybody was so anxious for the bird to survive they were reluctant to accept this as an indication something was awry. By the second week of July, however, the bird was frequently gasping for air. Then, about 9:30 a.m., July 13, 1956 the young crane was discovered prostrate and limp in the enclosure. A keeper entered it to find out what was ailing the chick. He was assailed by Jo and Crip, whom he had to fend off with a chair. He found the chick dead.

Born May 29, the first of the two chicks to be hatched, this surviving bird died at the age of 45 days. He was 33½ inches tall and weighed 4¾ pounds. Death was attributed to *Aspergillus*, or "brooder pneumonia," a fungus disease that frequently attacks game birds, waterfowl, and songbirds.* Thus by a double stroke of misfortune, Jo and Crip lost the two chicks hatched from

*For an account of this disease, its causes and symptoms, and some of the animals affected by it, see, "Warning to Bird-Attractors," p. 2, *Audubon Magazine*, January-February 1956 issue.
—THE EDITOR

eggs laid four days apart, on April 28 and May 2, 1956.

It was on the evening of May 28 that Douglass and other observers began to anticipate the birth of the first and elder crane that died of *Aspergillus*. Both birds were nervous. Jo appeared "very fussy," according to Douglass. Crip stood like a statue over the nest. Jo, for the first time, would not allow him to incubate the eggs.

About 10:15 a.m. on May 29, as Jo turned the eggs, a small hole was noted in one of them. The hole grew larger, and by 2:05 p.m. a wing was protruding. At 2:36 the chick had completely emerged from the shell. A keeper had reported hearing a peeping sound coming from the nest much earlier that morning. Apparently it was the chick calling from within its shell. The chick was a rusty brown and wet when hatched. It was several hours before it became downy and fluffy.

Douglass believes Jo and Crip talk with one another, a low gurgling call, the same one that she had used to call the young bird. After the birth of the first chick, Douglass said that Jo arose and called Crip over to the nest with the low, gurgling call. Then the two parents placed their beaks together and

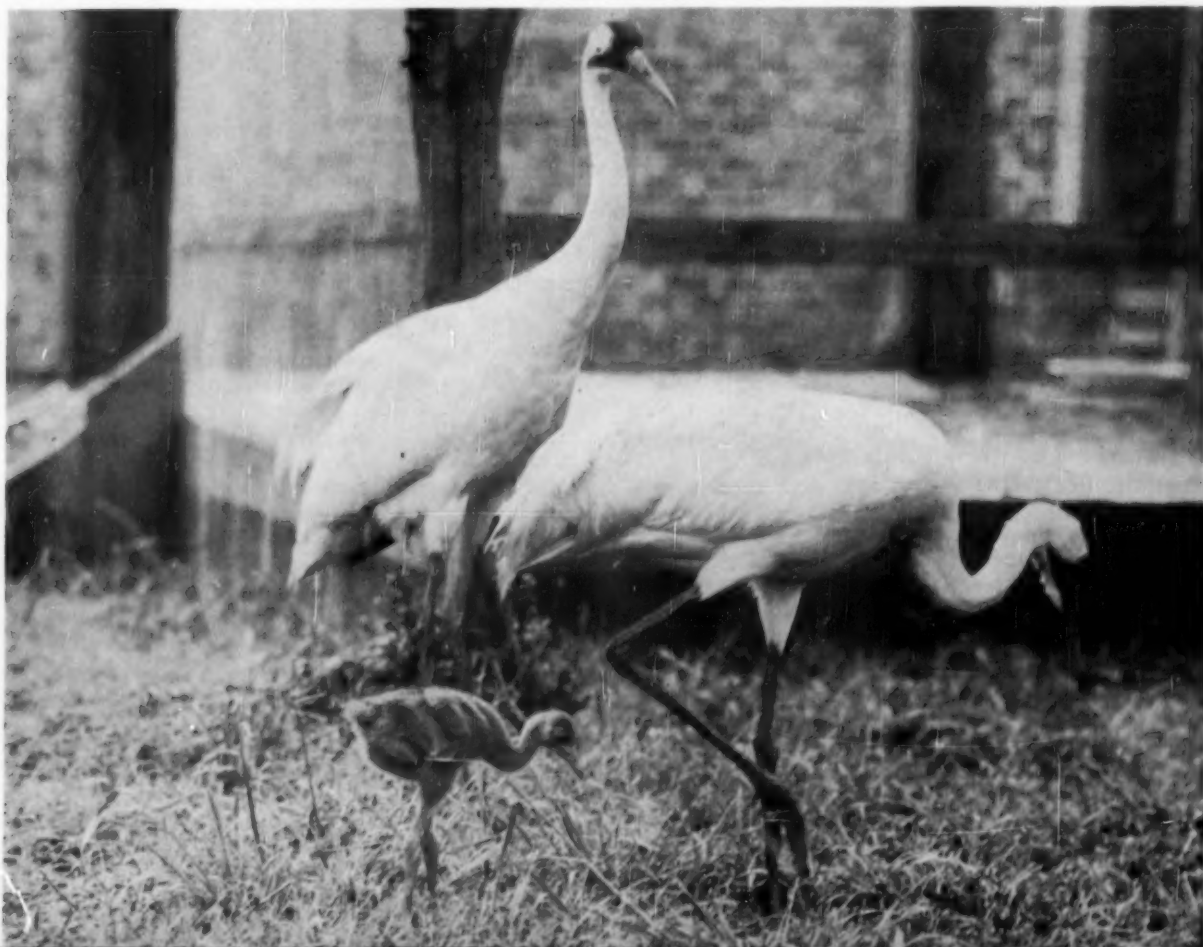
pointed them downward, near the earth. Slowly and tensely they drew their beaks up, finally stretching their heads and necks, with beaks pointed skyward, until they grew about two feet taller, and issued a loud bugling call that resounded across Audubon Park. Douglass said the adult cranes repeated this call six or seven times within the next few days. He had never heard it before, and he said that it was not a whoop, but was more of a bugling call.

Jo and Crip didn't allow this repeated ceremony to interfere with their family responsibilities. Crip, for the most part, took charge of the elder youngster, while Jo concentrated upon the incubation of the second egg. These duties were sometimes reversed, but Crip throughout the development of the older chick was the more solicitous parent.

Nevertheless, the little crane did not stray far from its mother for the first hours of its existence. It spent most of its time snugly tucked under her wing. Usually, the chick would creep under her wing from the rear, and it was likely to pop out from under her in the most curious places. Sometimes, Jo would gently tuck its protruding head back under her wing.

Tragedy has dogged Jo and Crip for

"Jo and Crip fed many of the food morsels to their youngster."



several years. Douglass said that Jo laid a single egg last year, in the spring of 1955, that was accidentally destroyed by Jo herself, shortly after it was discovered. She stepped on the egg, while in a state of fury over a man outside the zoo enclosure who was teasing her.

Jo and Crip were the parents of "Rusty," the first whooping crane born in captivity. At the time, in 1950, they were living in the 150-acre open-topped enclosure on the federal Aransas Wildlife Refuge in Texas. Rusty disappeared on May 28, only four days after hatching.* Jo, the female, brought to Audubon Park Zoo in 1941, had been wounded and captured in Louisiana in 1940. Later she was sent to the Aransas Wildlife Refuge in Texas for breeding experiments with a captive male whooping crane. Crip, injured and captured on

*See *Audubon Magazine*, July-August 1950 issue, p. 256. For the complete story of Crip and Jo, and other breeding experiments with captive whooping cranes, see "The Whooping Crane," by Robert Porter Allen, Research Report No. 3 of the National Audubon Society.—TWE EDITORS

the Aransas Wildlife Refuge in 1949, was placed with Jo in the 150-acre enclosure there. Later, they were sent to the Audubon Park Zoo, from which Jo had been "borrowed."

Crip is easily distinguished from Jo by his crippled, limp wing, also, he is taller, and has a much more extensive patch of black on the back of his head. According to Douglass, the birds have held the famed courtship dance of the cranes regularly since their arrival there, without regard to month or season. They did not cease to dance, Douglass said, until the laying of the two eggs this year. He believes they will resume their dancing.

All is not gloom at Audubon Park Zoo. This year's eggs were laid, Douglass says, at the exact spot where last year's single egg was placed, on a wad of old straw alongside the fence, in the only open area in the enclosure. Douglass is confident that they will breed again next year and that Jo will lay in the same place. —THE END

invariable. Quite as much success in capturing food seems to attend a direct stab of the cattle egret's bill, as one preceded by waggling. The same bird will waggle at one time but not at the next. Even when walking about without purposely seeking food a bird may give two or three waggles—it is almost a habit. For instance, a wild bird which alighted on our lawn and which was not aware of my watching it from about eight yards away, stood with its head erect. While it inspected its unfamiliar surroundings, it gave a typical little neck waggle every now and then.

Sometimes a bird will stand poised and motionless for about a minute, with its neck outstretched and its bill pointing in the manner of a gray heron, *Ardea cinerea*, which points at the water while hunting for frogs. This is not a common habit with the cattle egret. When not in the company of cattle or other animals the egrets run hither and thither seeking food just as they do when the cattle are present. They are just as successful in hunting, when walking. Cattle are not necessary to the birds, but they are helpful.

Several birds will attend a herd of cattle or perhaps only one beast. If the cattle are lying down at rest the birds walk among them peering at the beasts' heads, bodies, and tails and may peck idly here and there. But when the animals rise and begin feeding, the birds dash about energetically stabbing at insects on all sides. It is significant that the birds do not feed ahead of the animals only, but on either side and to the rear.

That grasshoppers reveal themselves more readily when a beast is on the move and conceal themselves when the birds only are on the feed I proved by walking slowly along at the pace of a grazing ox on a patch of veld beside which some egrets and cattle had passed. I noted that while I stood still there was no sign of insect activity but as soon as I moved the grasshoppers moved. They did not hop away but merely shifted their positions on the grass stems, but this slight movement was quite enough to catch my eye. If this movement is enough to catch the human eye, how much more will it attract the eye of an egret? It seems that the grasshoppers

THE CATTLE EGRET IN SOUTH AFRICA—Continued from Page 221

them until they were ready to fly away with the adults. I have never seen one being fed out in the veld. Although both adults and young at this stage have yellow bills, the adults can be distinguished by their yellow legs (until February and March) and the young by their black legs. In addition, the youngsters have no dorsal plumes of buff.

There is no nest-sanitation. Unlike storks, which eject their feces forcibly over the edge of the nest, the young egrets defecate weakly into the nest itself. The liquid feces penetrate the interstices of the nest and form a firm cement. Eggshells are dropped over the side of the nest by the adults.

Plumages of the Cattle Egret

The adult plumage changes seasonally as follows: in autumn and winter—from March to September—the bill is orange-yellow; the legs pale green; the brownness on throat and dorsals is absent, although some birds may have a brown wash on the crown.

From September to February—the breeding season—courting birds of both sexes develop reddish bills, reddish irides, reddish eye-rings, and reddish legs, but as soon as egg-laying is complete, the redness is replaced by yellow at these places.

The emergence of the red more or less coincides with the browning of the crown, throat, and dorsal feathers. There is some variation. During the molt in March, the birds revert to the off-season, or winter plumage. The great heights of the nests above the ground, and the nature of the trees in which the nests are built, has made the exact measurement of an incubation period impossible to date. An unreliable one was about 26 days. The breeding cycle has been worked out as follows:

Breeding Cycle in Days

Courtship	1 to 2 days
Nest-building and egg-laying	11 days
Incubation period ...	about 26 days
Nestling period	about 30 days
Total	about 68 days

Food Habits

Cattle egrets take their food on the ground, on grass, on low-growing bushes, or on animals by means of quick stabs of the beak, either with or without a preliminary poise for aiming. The poise may be accompanied by either a slow or a rapid waggling of the lower neck and body, with the head more or less kept still, but this is by no means

do not move for the birds. It may be that the neck-wagging tends to make insects move and reveal themselves, but, as I have stated, neck-wagging is not consistent.

Cattle Egrets and Ticks

In South Africa this bird is commonly known as the "tick bird" because it has the reputation of living largely or entirely on the ticks which infest the cattle and which are such a real economic pest in the country. There is no doubt that the birds do take ticks, especially females of the blue tick, *Boophilus decoloratus*, when they are fully engorged with blood they have sucked from their bovine hosts. Cattle that are not systematically dipped in a poison to kill the ticks are often heavily infested with them. But cattle egrets are not tick-eaters to the extent that they are credited. I have seen them picking ticks off the cattle, from their necks and even under their tails. Often, however, when an egret is stabbing around a beast's head, it is taking flies.

At times the egrets show no interest in ticks. I once watched 22 cattle egrets among a herd of 30 cattle which were heavily infested with engorged female ticks. I watched for over an hour, yet only one egret took a tick. The birds were walking among the animals searching their bodies eagerly with their heads only a few inches from the ticks, yet they did not eat them. Four birds actually stood beside one cow on whose neck, body, and udder I counted 21 engorged ticks within their reach.

Summary of Food Habits

In our part of the world, grasshoppers are without doubt the most important item in the birds' diet. I have examined the regurgitated stomach pellets beneath the roosts and nesting sites by the hundreds, and found that grasshopper remains were predominant. I have also examined the stomachs of nestlings that had fallen from the nest and had died, and found the same. In scores of cattle egrets' stomachs, grasshoppers were the only food, although the diet is very often greatly mixed. In one stomach I found 33 grasshoppers, 10 centipedes, one wasp, two lepidopterous larvae, one spider, one homopterid and two unidentified insects.

Turn to next Page

HOW IT

GOT

petrel

ITS NAME



By Webb B. Garrison

ENGLISH seamen of the 17th century took great interest in a bird they saw in the north Atlantic. Sooty black with white markings, the little sea fowl usually flew very low over the water. This habit grew out of the fact that it feeds on small surface-swimming creatures.

Sailors weren't interested in the bird's diet, however. They were fascinated by the way it would glide along with wings motionless, seem-

ing to pat the top of the water with its feet. It didn't take a vivid imagination to think of the little creature as walking upon the water.

William Dampier took note of the bird in his book, "A New Voyage Around the World" (1703). Its habits, said he, made pious explorers think of the man who walked on the water of a lake. So the name of St. Peter was bestowed upon the water-walking bird. Slightly altered, it became the familiar petrel.

—THE END.

A general list of the foods taken is as follows:

Arthropoda:	Orthoptera	—grasshoppers and locusts; mantids and crickets.
	Lepidoptera	—larvae, pupae, and adults of various species.
	Coleoptera	—occasional.
	Hymenoptera	—wasps.
	Odonata	—dragonflies.
	Diptera	—blue-bottle flies, Asilid (robber) flies.
	Homoptera	—probably Cercopids.
	Arachnida	—Solfuges and many other types, and ticks.
Myriopoda:	Centipedes.	
Amphibia:	Grass and river frogs, toads, and clawed toads (<i>Xenopus</i>).	
Reptilia:	Lizards.	
Mammalia:	Mice.	
Aves:	A friend reports seeing a cattle egret snap up a small bird, <i>Zosterops</i> . The bird had come to drink alongside of where the egret stood at the water's edge.	

Feeding Habits in Captivity

Feeding our pets provided us with no difficulties. Small squares of beef were all they needed. We fed it to them by hand, threw it on the ground or placed it on a plate. Some birds, at first, hesitated to take it from us but others took it immediately, without fear. It is at feeding time that the great distension of the cattle egret's gape is noticeable. The normal width of the base of a mandible of a half-grown bird was 11 millimeters; but when extended it measured 32 millimeters, or almost three times greater.

When we fed the meat to the birds straight from the refrigerator, they swallowed it as usual, but within a moment they regurgitated it. We discovered we must always warm it under the hot water tap before feeding it to them. The birds took meat readily and greedily, but if a piece of bread of equal size were substituted they ignored it with little more than a cursory glance.

Once during our evening meal a young egret wandered into our dining room, flew up on the dining room table, and, in a flash snatched a piece of sausage off my son's plate. When thwarted of further food-getting from our plates, it turned its attention to the sausages in a glass dish where it pecked frantically at the lid. It made no attempt to take any of the various vegetables on our supper plates.

When this young cattle egret was first put out on the lawn from its box on the veranda, it reacted immediately to the movements of insects—even the smallest of them. It ate these, yet the bread, equally as

foreign to it at that stage, it refused. Another captive bird, which attached itself to us rather more than the others, used to walk into the house at all times of the day. If the kitchen door were left open, it would fly in and alight on a bread-bin or cupboard awaiting its food. If we put out the cat's meat and the birds were there it would take from the cat without fear, so that in the end we had to protect the cat from the bird, not the bird from the cat. This young egret took possession of the window-sill of our lounge for its roost and remained obstinately attached to it. Nothing we could do would alter its habits. Eventually we had to compromise by covering the window-sill and wall below it with newspapers for the sake of cleanliness.

Parasites and "enemies"

One year we found that the young birds were "going off their legs," that is, they were getting some form of paralysis which eventually killed them. We thought that the diet of meat might not be sufficiently balanced, but not all birds were thus affected. Events have proved this wrong, and I now think that they were suffering from the tick-borne disease, Neurolymphomatiasis, which is spread by the fowl tick, *Argas persicus*, with which the birds were heavily infested that year.

Of their natural enemies I have little knowledge. Eagles take the young and cause great consternation in the colonies. From Addo, some 150 miles from here, comes the report of harrier hawks, *Gymnogenus typicus*, laying waste a heronry. It is possible that genets, *Genetta spp.*,

are troublesome, but the cattle egret does not seem to be especially palatable to predatory animals. Domestic cats and dogs have never shown any interest in our pets.

Taken all in all, the study of this bird has been one of the greatest interest and satisfaction. I sincerely hope that my colleagues in the United States will have as much enjoyment with studies of the cattle egret there, as it spreads throughout their country, which it surely will do.

I do most sincerely urge that the ornithologists in both North and South America take the greatest pains to map the increasing distribution of the bird. It would be interesting to watch its spread to the west coast of North and South America, and then, perhaps, to see it hop across the Pacific to the islands there and—who knows—circumnavigate the globe in due course. This surmise may seem far-fetched, but it is not outside the bounds of possibility. All that the cattle egret may need is—time.

—THE END.

★ ★ ★ NAT

Our "Nature in the News" item for this issue, an editorial from a Florida newspaper, is about the future status of the key deer of Florida, and of the efforts of a 16-year-old boy of that state to help provide a permanent home for it. Scout Glen T. Allen—an Eagle Scout—of Hialeah Boy Scout Troop 10, who lives at 3565 N.W. 36th Street, Miami 42, Florida, wrote to us recently, as follows:

"Receiving my first copy of your magazine gave me an extra thrill when I saw the note about key deer protection on page 89 of the March-April 1956 issue. I have been fighting for five years to get them a permanent home, which began as a Boy Scout Conservation Project. . . . I thought you would be glad to know that Congress has a bill (H.R. 10532) now under study which will give the key deer a home. . . ."

We think our readers will be glad to know of young men, like Glen Allen, who are deeply interested in helping threatened species of American wildlife. We have assured Glen of our long and continued interest in the key deer, as reported on from time to time by John H. Baker in his column, "The President Reports to You." Early in June 1956, Mr. Baker wrote the Honorable Frank M. Boykin, Chairman of the Subcom-

I LIVE WITH A BLACK-TAILED JACK RABBIT—Continued from Page 205

the couch, her rear feet stretched out, and her head and ears down, a picture of contentment.

When she was small I would let her outside on her own and she would return through the open door in about an hour. But one day I paddled her lightly with a piece of paper for some indiscretion, perhaps for jumping onto the dining table or an open bed. Intelligent as she is, she soon learned by this method of punishment what she shouldn't do. The next day, when I let her out to "run" a little, she stayed out for 40 hours! It was a moonlit night, and far and wide I roamed, searching for her, but I did not find Harveya.

That evening, as I sat at the dinner table with guests, I heard Harveya scratch at the sliding door to the patio. I opened the door and Harveya came up to me. She lay down at my feet for me to pick her up, which I did with pleasure! Soon she came to the refrigerator, and assumed her "asking" position. I got

up from the table to get her some milk, and she followed me, standing up on her hind legs to the amusement of my guests. I am sure that she was as glad to be home as I was to have her. I might add that everyone of us enjoyed our dinner after that. I know that my appetite was restored.

Harveya likes to play. In the evenings, she pulls at my leg, hops away, then half turns as an invitation for me to chase her, and the romp is on. A large sofa is heaped with pillows across the center and while I clap my hands, swinging from one side to the other she has learned to leap back and forth over the barrier. This is varied by a flying jump to the huge upholstered chair, down and around, in and out of corners, on and under furniture, and then back to the sofa again. When she is tired she will let me know about it. She will slap at me with her hind feet as if to say "that's enough!" If I insist on romping, she

will turn in her tracks with a speed and dexterity that is incredible, and will kick at me with her hind feet. This is usually accompanied by an amusing sideways wiggle of her haunches. Then, with a rapidly beating heart, which I can see pounding the sides of her lithe body, she is willing to be caressed, although she permits this at any time. As I stroke her, especially about the base of the ears and down her back, she relaxes in obvious satisfaction. She jumps on me at times, and stays near me, but does not fawn as a dog does. She has never scratched me.

The possibility of letting her have a family of her own, has, of course, been discussed and if there are ever baby Harveyas I hope to have success in domestication of one or more of her offspring. But from my experience with Harveya I can truly say that if anyone will take the time, they, too, may develop a charming and loyal pet from one of these little hares with the big brown eyes and the long ears.

—THE END.

U R E I N T H E N E W S ★ ★ ★

mittee on Fisheries and Wildlife Conservation, urging the passage of the Key Deer Refuge bill, H.R. 10332, which will provide a permanent refuge for the key deer. We quote from Mr. Baker's letter as follows:

"Our Society has long been interested in the establishment of an adequate refuge for this diminutive deer. Accord-

ing to our understanding, the bill would authorize the Secretary of the Interior to acquire not to exceed 1,000 acres of land in the vicinity of Big Pine Key, and maintain it as a Key Deer Refuge.

"We sincerely trust that your subcommittee, and indeed the full committee, will, in its wisdom, act favorably upon this bill."—The Editor

Reprinted from Allapattah News (Miami, Florida), May 31, 1956.

Let's Make a Home...

We consider it a tragedy when a home is destroyed by lightning, floods or storms. We sympathize with a family whose home is lost by a mortgage foreclosure. We shudder when a house is ransacked by vandals. Right close to us is a dainty little family that is about to lose its home, when it is within our power to help gain a permanent home for the occupants.

The tiny, rare Florida Key Deer are in danger of losing their home. Building and clearing land is taking away much of the habitat of these creatures, making the land barren. By saving the herd, the land also could be saved.

The Key-Deer bill, No. H.R. 10332 is now under study by the U. S. Congress. A letter from you to Dante Fascell or

Congressman Charles E. Bennett, asking for a permanent home for the herd so it can grow and increase, will help save a priceless bit of wildlife for future generations.

Allapattah has one of its younger citizens who has been working on this project for several years. He is Glen Allen, student at Robert E. Lee Junior High School. He has recently been awarded the Woodmen of the World Conservation Award by former Governor E. D. Rivers of Georgia.

A letter to a Congressman is such a small matter to accomplish so much good. Let's enlarge our vision and see what can be done for the future of the deer in providing a permanent home. It might be well for more citi-

zens to live up to the Conservation Pledge—"I give my pledge as an American to save and faithfully to defend from waste the natural resources of my country, its soil and minerals, its forests, waters, and wildlife."



Photograph of Eagle Scout, Glen T. Allen, of Miami, Florida.



Drawings by Louis
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How to Attract Birds



Winter Bird Guests in British Columbia

By G. E. Smith

I HAVE had my own bird feeding station here in the backyard at Westview, British Columbia, for about six years and the Steller's jay is, of course, a common visitor. As soon as cold weather sets in, and especially if we get some snow, the birds come in fairly large numbers—juncos, English sparrows, song sparrows, wood thrushes, varied thrushes, arctic towhees, robins, flickers, blackbirds (various kinds), purple finches, and evening grosbeaks.

I get up at dawn most of the winter and take out chick-mash mixed with birdseed and rolled oats, chopped apple, and raisins, whole-wheat bread, suet, bacon dripping, and soup bones. The last two items, together with rolled oats, are noticeably favored by the flickers. When I step outside, especially if there is some snow on the ground, the birds will be waiting all along our wooden fence and perched around in the fruit trees and the "hubbub" is terrific. If the snow is deep I sweep a large patch, or patches, of it away and put down pieces of cardboard as the robins and varied thrushes, in particular, seem to suffer considerable from standing on the damp snow. After I have sprinkled feed on the cardboard the birds all gather to eat like a strange variegated flock of domestic fowl. I put food out at intervals all day then until dusk.

Contrary to what some persons claim I have never found the majority of birds to become too dependent when food is provided for them. Most of the birds come in only with the first sign of bad weather conditions and leave just as readily when conditions improve. Sometimes I won't see a blackbird in the yard for months, then the weather will become cold and a flock of 60 or 70 will swoop in quite unexpectedly.

Six European starlings came in during the winter of 1948, which was, according to authorities at the University of British Columbia, the first year for them to be reported in this province. I haven't seen that many since. In 1951 there were two here, in 1952 one, and I saw one in the yard about two weeks ago.

Every now and again something different comes along. In 1952 when one foot of snow was on the ground two rosy finches came in. They were delightful to see with their fluffy, rounded gray parkas and the second morning after they arrived one came within almost a foot of my hand as I sprinkled food along the fence rail. On February 4, 1953 a pygmy owl, no larger than a large sparrow, came to the fence near the back door. I have had one yellow-headed blackbird, one Lewis' woodpecker, one yellow-breasted sapsucker, and in December 1951, four meadowlarks. Every September we see one, sometimes two, pileated woodpeckers.

From watching the birds I have come to notice what marked personalities the different species have. The flicker, despite his large size and formidable beak is always the perfect gentleman, so that even the little junco that is being chased off continually by the other birds will eat right alongside him with-

Turn to Page 230



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out any fear. The robins are possessive and inclined to become irritable under adverse conditions but the varied thrush is the most irritable of all, which, I think, is due likely to the fact that it isn't inclined to be gregarious. It won't come in until bad weather makes it imperative and then it will spend a great deal of time raising a din with its peculiar "hissing-wail" which shows its displeasure at being bothered by the other birds. The blackbirds are, of course, crafty and smart. They are never satisfied with merely finishing the food when it is spread out on cardboard but afterwards must also move the cardboard to see if they can find any more stray bits underneath.

The crows come in too, and when the yard becomes crowded I put food at the very back of the yard on an old stump for them. By chasing off any that intrude upon the smaller birds nearer the house they soon learn they are to eat only at the back. One morning, as usual, they had gobbled their food down before the smaller birds had scarcely started theirs on the sheets of cardboard directly behind the house. Soon about six or eight crows had lined up on the fence and were eyeing the robins and thrushes that were still busy with their breakfasts. Suddenly a couple of the crows gave a warning "caw" like they do whenever a cat comes into or near

the yard. Immediately all the smaller birds flew up into the fruit trees and an air of expectancy and quiet reigned—but no cat appeared. Gradually the birds flew down again and soon were all busy eating once more. Then suddenly came more loud cawing and back up into the fruit trees flew the smaller birds again. This was repeated several times until it became quite apparent to me the roguish old crows were just indulging in a little after-breakfast sport of keeping the smaller birds from their breakfast.

It might be of interest to add that on November 30, 1953 one of my bird feeding trays was visited by a blue jay. Upon reporting this to the Department of Zoology, University of British Columbia, I was informed that this is the first record of a blue jay to be seen in this province west of the Rockies. I recognized the bird immediately as I lived previously in Manitoba where they are common visitors. It was a very light blue and on the back this shaded to almost a mauve, very similar to the illustration in P. A. Taverner's "Birds of Canada." It visited the tray (which is just outside my kitchen window) frequently for four days and then apparently flew elsewhere.

—THE END.

FUNGI—FRIENDS OF THE FOREST

Continued from Page 215

seeding or by planting. Their removal would entail excessive costs, and stumps of western red cedar and Douglas fir would remain almost intact without the destructive attacks of fungi and their natural allies.

During the long process of disintegration by fungi, each big stump becomes a fascinating community of plant and animal activity. Piles of crumbling wood accumulate around the base, furnishing a home for earthworms and insects. Cavities excavated by woodpeckers in search of grubs become repositories of native hazelnuts gathered by chipmunks and squirrels. When overlooked nuts germinate, the stump becomes festooned with hazel seedlings.

Birds which recently have dined on mountain ash fruits and huckleberries, roost on the stump with the eventual result that those two plants usually take over the upper strata. Wind-borne seeds from cedars and hemlocks lodge in the thick mass of fungi and moss which blanket the stump, so that it is not unusual to see trees 20 or 30 feet high growing atop the old forest veteran, their roots creeping down its sides to find lodgment in mineral soil. As the stump crumbles, these tree roots

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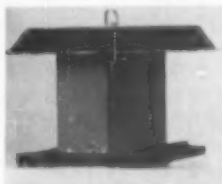
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thicken to form a high arched crown above the pile of decaying wood.

Community life on and around the old stump is so complicated and interesting that it's easy for one to lose sight of the basic business which is being transacted, namely the conversion of hundreds of cubic feet of waste wood into forest mulch. The livelihood of all inhabitants of the stump community depends upon the saprophytic fungi which engineer the initial breakdown of wood structure.

Perhaps the most completely equipped laboratory of "Wood Transformation, Unlimited" is in the unique rain forest of Olympic National Park. Here for centuries forest giants have germinated, grown to maturity, died, and plunged to earth, to be dissected and returned to their elements by nature's expert technicians.

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to build the thick carpet of mulch which protects the life of the only great rain forest within the continental United States.

For keeping this, and other great forests of our country clean and fertile, fungi and their working associates should be given a medal of honor—with oak-leaf cluster—by conservationists and foresters from coast to coast.

—THE END.

FENCE LIZARDS IN MY GARDEN

Continued from Page 211

well-known phenomenon common to most lizards and may frequently be the means of saving the lizard's life. Any predator grabbing the lizard by the tail will be left only with that wriggling appendage while the lizard escapes. The lizard then grows a new tail. Rarely, a fork-tailed lizard is found, probably where a newly started tail has suffered some injury, or was only partly disjointed.

Fence lizards and their close allies are found over much of the United States and are also called swifts or scaly lizards. They are much rougher than many lizards, as each scale has a keel down the center which extends out into a spiny

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point. Fence lizards feed largely on insects. They are quite useful and deserve our protection, but they also merit our sympathy because of the interesting role they play in the animal and plant community.

—THE END.

THE PRESIDENT REPORTS TO YOU

Continued from Page 217

thus Interior's control of fish and wildlife matters is fully retained, but at the same time commercial fishery matters are taken out from under the wing of the present Fish and Wildlife Service, where it was felt by the commercial fishery people that their affairs were too much under the control of those primarily interested in sport fishing. The act also provides for substantial loans and other aids to the commercial fishery industry. It seems to us that the net result is beneficial, in that, through the creation of the new Assistant Secretaryship for Fish and Wildlife, the importance of those resources gains greater recognition in the Department.

The question of who would manage marine mammals was decided by allocation of management responsibility for whales, seals, and sea

lions to the Bureau of Commercial Fisheries. As is well known, many commercial fishermen regard the seals and sea lions as harmful predators, and urge their slaughter. There is no evidence that they are the cause of the economic difficulties of west coast commercial fishermen. These animals have existed with great numbers of fish for a long time, and it is only since the day of nets, dams, and pollution that the fish have declined appreciably. It seems to us that an unfortunate exception has been made in the Act in the case of these mammals.

Conservation Legislation

The water pollution control act, which was to expire June 30 last, has become public law #660. It involves a compromise which is a distinct improvement. Funds to finance certain provisions thereof were provided in a final supplemental appropriation bill, including 50 million dollars for construction grants and \$2 million for grants to state and inter-state agencies.

The Engle military lands bill, H.R. #12185, which would require military compliance with state fish and game laws on military areas, and would also require Congressional approval of any military land withdrawals in excess of 5,000 acres, was passed by the House, but too late to permit committee clearance and floor action in the Senate.

Birds and Weather

Evidencing the fact that many other kinds of animals sense far better than humans what is transpiring in nature, we quote a brief extract from recent report of Audubon Warden John O. Larson, Jr., at Green Island, Texas, just off Harlingen: "July 25—Received first tropical storm warning today but the birds are not showing any sign of a storm coming. July 26—Storm headed for Tampico, Mexico."

Annual Convention, 1956

The annual convention of your Society will be held at Audubon House, 1130 Fifth Avenue, New York City, from November 10 to 13 inclusive. The convention will end with the annual dinner on the evening of Tuesday, November 13. Members should receive programs about October 1.

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Birds and the Cold Spring of 1956*

FOR those of us in Canada, who enjoy the beautiful flights of birds, the gleam of their lovely plumage, and the richness of their songs, the spring of 1956 was a very sad one. Those who welcomed the lovely purple martins found it an especially sad time.

Many people had put up new houses for martins or had refurbished their old ones. Some of these martin homes are very simple, with room for but one pair; others are very elaborate. One we know of here has rooms for about 100 pairs of martins. As these birds return to the same site at about the same time each year, they were expected to do so in the spring of 1956. A couple of very mild days in April with strong southerly winds brought scores of martins and other small birds up into Ontario, but this warm weather was of short duration and winter quickly returned for another onslaught. Many, many early migrants perished.

One farmer told us that on a very cold night in late April, his cow barn was filled with small birds—about 500 or so—which had flown in there for warmth. Others told us of seeing them huddled in abandoned old buildings or under lean-to's. No one disturbed the birds where they sought shelter, and it was hoped they would be able to keep alive in this way.

Another farmer found all of his martins dead on the lawn. They had been able to keep warm, but had died of starvation for no insects were flying about at that time and the martin, of course, usually feeds on insects while in flight. A school teacher of Westport, Ontario found 15 of his martins dead below the birdhouse he had put up for them at about that time. Other persons nearby told of their colonies being wiped out by the cold weather.

The veranda of our cottage on Beverly Lake in Ontario overhangs the water and has a southern exposure. On one of those wretchedly cold nights of late April, 1956, 162 barn swallows spent the night there, perched on the aerial which runs underneath the porch roof. When my husband went out in the morning they hardly moved, but after the sun had warmed them up a bit they flew off. As far as we know only one of these perished. It was picked up in the yard later on. We expected to have many birds seeking our shelter on cold nights, and we left the place unscreened for their convenience.

EDITOR'S NOTE: In the July-August issue of Audubon Magazine, under "Nature in the News," p. 162, we published a note about scarlet tanagers and other birds that were affected in the eastern United States by the cold, wet spring of 1956.

Turn to next Page

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REPRINTS

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Audubon Magazine articles offer new perspective for Americans. Whether you're an at-home conservationist, a well-traveled bird-watcher—or one who hasn't quite decided what niche you'd like to fill—there's an Audubon Magazine reprint for you. Here's a selection that suggests a variety of activities.

THE TRAVELER

Gaspe Vacation, by *Hustace H. Poor*. One of the most thrilling sights in nature is the huge gannet colony on Bonaventure Island. The author tells you all about it and also describes the fabulous animal and plant life of this naturalist's paradise.

FOR THE BIRD-WATCHER

Wings Across the Moon, by *Robert J. Newman*. The story of night-time bird-watching during fall migration. Here's a fascinating new activity for the individual or bird club which can add to our scientific knowledge of migration.

THE BIRD-ATTRACTOR

Let's Get Ready for Winter Feeding, by *John V. Dennis*. Wonderful ideas and ways of preparing for your winter bird guests.

Winter Problems at the Feeding Station, by *John V. Dennis*. Some bird-attractors do have problems with cats, squirrels, and other animals. Mr. Dennis discusses them and offers some practical solutions.

More Birds for Your Garden, by *John K. Terres*. Details on selecting the trees and shrubs most attractive to the greatest variety of birds, and a well-illustrated section on providing water for birds.

Flower Gardens for Birds, by *Robert S. Lemmon*. How to plan a flower garden that will prove attractive to birds.

CONSERVATION PROBLEMS

(Your letters to legislators, newspapers, magazines, and radio and TV broadcasters, can help preserve our wilderness areas and save many of our vanishing species of wildlife. These reprints will provide you with the information necessary for a clear and authoritative viewpoint.)

The Key Deer: A Challenge from the Past, by *Robert P. Allen*. The story of one of our most appealing creatures—America's smallest deer—and the problems of its preservation.

Vanishing Wings Over the Sawgrass, by *Alexander Sprunt, Jr.* The author tells about the alarming plight of the beautiful Everglade kite and offers suggestions to prevent its extinction.

A Prize on His Golden Head, by *Olaus J. Murie*. Will the breath-taking sight of a majestic golden eagle circling in the heavens be lost to future generations? The author is concerned about the lack of appreciation of this magnificent creature.

A Closer Look at the Killers, by *Paul L. Errington*. An authority on the food habits of predatory birds and mammals finds that these creatures maintain their integrity as wild creatures regardless of human meddling.

Death in the Florida Marshes, by *Herbert R. Mills*. Deadly DDT, aimed at mosquitoes, may threaten an entire salt marsh community. Here is an alarming account of wildlife destruction in the Tampa Bay area.

10¢ each

REPRINTS

Audubon Magazine, 1130 Fifth Avenue, New York 28, New York

Our tree swallows came through the cold, backward spring very well. We have about 50 nesting boxes around the cottage and all were occupied. We believe the pairs sought shelter in their nesting boxes on cold nights. Our tree swallows have added berries, eggshells, and some weed seeds to their diet and these help them to survive when their favorite food of insects cannot be had. We put out plenty of eggshells and other food for them at this time.

We watched a bald eagle's nest near us rather anxiously. How could the parent bird sit high up there—its nest is easily 100 feet above the ground—with the north winds blowing at gale force and a squall of snow sifting down over the incubating bird every little while? She did, though, and the two soft-gray eaglets hatched safely. Luckily no trappers or fishermen were about to disturb the eagle and keep her off the eggs, for they would surely have frozen in a short time.

Purple martins will eat a few insects on the ground, and some eggshells, if these are provided for them. I believe the eggshells should be white ones so that the birds will notice them more quickly. Perhaps they might be helped during another spell of wintry weather by putting out chopped-up, hard-boiled eggs with plenty of shells mixed in. Insects could be placed near by if any could be found. I think that anyone who has gone to the trouble of putting up a house for martins will, like ourselves, be glad to go a step further and try to provide food for them during cold spells, when it is possible. Perhaps some of us might do a little experimental feeding, and try out some foods on our little guests. Then, when migrating birds come north to us before their normal warm weather has arrived, we shall be able to help tide them over a difficult time, when natural insect foods are not available to them.

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Experiences with Ruby-Throats in Missouri

By Mildred Gaylord

ON JULY 30, 1955, a day when the temperature rose to 100 degrees, a beautiful male ruby-throated hummingbird lingered over the blossoms of honeysuckle in my garden at Kansas City, Missouri. I immediately prepared a sugar-syrup mixture with which I filled the two glass tube feeders. Each tube is designed with rubber stopper and an open-centered red plastic flower which fits over an eighth-inch opening placed one-half inch up from the bottom of the tube. The aperture in the tube and that in the flower must be in exact alignment and the stopper tightly secured. I took these into the garden and fastened them to the shrubbery where the hummingbird could discover them.

A cool day in August brought a female ruby-throated hummingbird that joined the glamorous male in surprisingly congenial relationship. However, the acrobatic performances were really initiated with the arrival, several days later, of three more female hummers. It was then that the male staked his territorial claims around the east feeder, leaving it only to repulse attacks from his companions, which, by necessity, had chosen the west feeder. All four birds executed complicated aerial maneuvers as they chased each other in and out of the water spray from my garden hose on hot, dry afternoons.

One morning just after I had filled their feeders, one hummer flew directly to me and hovered within a few inches of my red and white checked dress. It must have thought a whole field of red flowers would yield more nectar than the single plastic one on each feeder. I heard the whir of wings, its friendly chirps, and observed the small feet drawn close to its body. The bird's fearless approach gave me an idea. Perhaps it would drink from the feeder if I held the tube in my hand.

Two days later on a hot September morning the little hummer came quickly and drank from the feeder in my hand, apparently with confidence, as it feasted heartily, its sips punctuated by chirps of satisfaction.

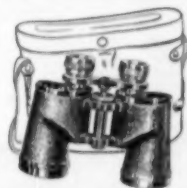
The next day I held a freshly-filled feeder in each hand—and had a hummer at each feeder—a thrill which I had never before experienced. The same day a third bird drank from the feeder I held in my hand. The birds' tubular tongues, as withdrawn from the plastic flower, resembled gray silken threads.

From this intimate view which hand-feeding had afforded me, I was now able to know each bird as an individual. There were, besides the male that still gazed at the landscape from his lofty perch, three hummingbirds each having decidedly different physical characteristics. The first one with which I shared the nectar was the largest, having a comparatively heavy bill and light gray breast marked with two dark spots. Perhaps this one was the eldest of the three and had experienced several seasons of parenthood. The other two were small; one with finely streaked throat of dark broken lines; the other sported a tiny gorgeous ruby in the center of an exceedingly faintly streaked throat. The pattern of plumage which distinguished the two smaller birds from the larger one gave me reason to think that perhaps here were two immature males. I should like to know. Perhaps this versatile troupe of itinerate players was a family group traveling together.

The period of greatest activity was always from late afternoon until dusk. This play gradually lessened, until, on a cool showery afternoon, September 25, only one of the original group remained—the mature female hummer which found shelter under the back porch roof where it sat on the clothesline near the door, as if reluctant to depart. Frequently throughout the afternoon I offered it syrup from a feeder which I had brought into the house. The bird drank freely and softly chirped its gratitude. Alone it had answered the last curtain call and had remained to acknowledge plaudits of its audience. When it left, it had my best wishes for a safe journey to its winter home, and my hopes for a prompt return to next season's engagement!

—THE END.

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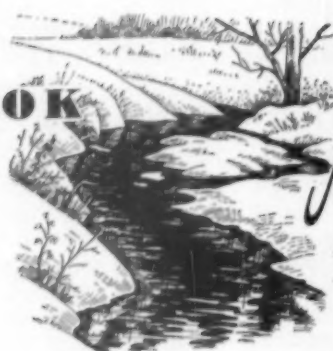
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BOOK



Notes

Amy Clampitt

Asst. Librarian, Audubon House

SPRING ON AN ARCTIC ISLAND

By Katharine Scherman, Little, Brown, and Company, Boston, Mass., 1956. 8½ x 5¼ in., 331 pp. Illustrated. Indexed. \$5.00.

"The lemming," observes the author of this delightful book, "is the god of the arctic — the helpless, maladjusted, nervous, frightened, persecuted deity, to which all life on the tundra must bow." In the summer of 1954 it also proved to be elusive: the expedition to Bylot Island, within the Arctic Circle, of which this is an informal account, actually succeeded in laying their hands on two live lemmings. Of these the first got away and the second apparently died of fright. But if this suggests a life of general gloom, misery, and terror, the eight Americans who made up the expedition found it anything but that. The very seals, according to the Eskimos who hunt them, like to be killed. And the Eskimos themselves, far from being either savage or callous, are gay, serene, and endlessly sociable. Into the good-natured, indolent, strangely dream-like rhythm of their existence under a northern sun, which for three months never drops below the horizon, the members of the expedition were irresistibly absorbed. The observations they made on the courtship and nesting of golden plovers and Lapland longspurs, as Miss Scherman reports them, should recommend the book to any reader of *Audubon Magazine*. Of equal interest are the queer, wandering, dream-like legends of the Eskimos she recounts, and the anthropological questions they raise. But the special charm of this book is in the mood which suffuses it throughout and which is its real subject—that rare, indefinable but very real thing, happiness.

MAN'S NATURE AND NATURE'S MAN: THE ECOLOGY OF HUMAN COMMUNITIES

By Lee R. Dice, University of Michigan Press, Ann Arbor, Mich., 1955. 8½ x 5½ in., 329 pp. Indexed. \$5.00.

Here the author of "Natural Communities" applies such ecological con-

cepts as plant and animal interrelationships, dynamics of populations, heredity, evolution, and deterioration, to a discussion of human communities. The kind of objectivity which a biologist can maintain toward the inhabitants of a salt marsh or beech-maple forest is not so easy to maintain with an absolutely straight face when the subject is man, even man in a Hopi pueblo; and where it is maintained, as Professor Dice apparently succeeds in doing, there is a good deal about man's nature—if not nature's man—which he is hardly allowed to discuss at all. The author does, however, step beyond these somewhat rigid limitations far enough to express a qualified belief in human freedom of choice and to reject explicitly an absolutely mechanistic concept of life. He includes a bibliography which, though not definitive, is both useful and illuminating.

THE CABIN

By Walter Collins O'Kane, Wake-Brook House, Sanbornville, New Hampshire, 1955. 8½ x 5¼ in., 246 pp. Illustrated. \$3.50.

"A violin maker lives near the cabin. Although I have seen the product of his craft, I have never met the craftsman . . . But sometimes when I am away overnight in the spring, he comes to my place and leaves in my dooryard specimens of his work . . . Strangely he thrusts these into the ground, so that not much more than the scroll is visible. Before I have had time to examine them they have become ferns." Quoted at random, this excerpt with its echo of the accent of Thoreau (which no writer on the New England woods can very well avoid, even if he should wish to), suggests the matter and manner of *The Cabin*. Mr. O'Kane, professor emeritus of entomology at the University of New Hampshire, offers in this book his gently episodic musings concerning such things as raccoons, elm-blossom, wood stoves, and geological weathering. The volume is attractively produced, with drawings in black and white by Francis Lee Jaques.

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ILLUSTRATED GUIDE TO TREES AND SHRUBS: A HANDBOOK OF THE WOODY PLANTS OF THE NORTH-EASTERN UNITED STATES AND ADJACENT REGIONS

By Arthur Harmount Graves, *Harper and Brothers, New York*, 1956. 9½ x 6 in., 271 pp. \$6.00.

This is a revision of a book first published in 1952. A winter key has been added, as well as several new species, and there have been some changes in nomenclature. For those who wish to pin down the identity of the so often perplexing woody plants but who find the standard botanical manuals confusing, this guide is highly recommended. Technical descriptions are given in condensed form, and are supplemented by useful suggestions for distinguishing families and genera. The illustrations are the work of Maud H. Purdy; printed from engravings on copper, they are unusually handsome as well as detailed, and make the book a pleasure to consult. Generally the leaf, bud, and branchlet are shown, occasionally with flower or fruit as well. The author is curator emeritus at the Brooklyn Botanic Garden.

THE SPIRIT OF THE WILD

By Dr. William J. Long, *Doubleday and Company, Inc., Garden City, N. Y.*, 1956. 8¼ x 5½ in., 256 pp. Illustrated. \$4.00.

The essays that make up this volume were discovered in manuscript by the author's daughter after his death in 1952. Written, it would appear, with little or no thought of publication—though a generation ago Dr. Long was one of the best-known and best-loved of writers on natural history—they have the beautifully unforced, unhurried tone of a wise and thoughtful man writing simply to record and clarify matters of interest to himself. Dr. Long in his day differed with Theodore Roosevelt, and in these essays he differs with a lot of other people on such subjects as predation and animal psychology. But his respect and affection for the fox, simply as a fox, is so genuine that the conservationist with whom he did not see eye to eye can hardly be offended. About half of the book is devoted to individual mammals—timber wolves, moose, porcupines, muskrats, and so forth—with whom the author had met up at various times.

CANOEABLE WATERWAYS OF NEW YORK STATE AND VICINITY

By Lawrence I. Grinnell, *Pageant Press, New York*, 1956. 8¼ x 5½ in., 349 pp. Illustrated. \$5.00.

"About 98 per cent of New York's canoeable rivers, described herein, most of the lakes listed that are open to the

public, practically all the inland waterways and a large part of New York's canals, totalling around 4,700 miles, have been personally explored by the author, usually accompanied by his wife. This exploration, conducted off and on during the past 37 years, has involved over 500 days (or fractions of days) of paddling, over 170 portages around dams, falls, impassable rapids, locks, or other impediments, as well as two upsets!" Here, in the author's own words, is the best possible statement of his qualifications to produce a definitive book on his chosen subject. Just about every conceivable aspect, including the derivation of names (for example, "Kinderhook Creek—Dutch 'children's point,' referring to Indian children") has been covered and codified here. Cruising data are helpfully arranged in statistical tables in a special appendix, and there is a map, as well as numerous photographs.

CONSERVING AMERICAN RESOURCES

By Ruben L. Parson, *Prentice-Hall, Inc., New York*, 1956. 9 x 6 in., 550 pp. Illustrated. Indexed. \$8.65.

In both style and format this outline of the main categories of our natural resources and their conservation is frankly popular. Cartoons, drawings, maps, charts, and photographs abound, and while these vary in quality, they all contribute to the author's purpose of making the subject lively, graphic, and accessible to any adult reader. Marginal captions throughout add to the book's usefulness for quick reference; while lists of sources cited at the ends of chapters, a selected bibliography, and a special section on teaching aids will recommend it particularly to teachers and other youth leaders.

FIRST BOOK OF ANIMALS

By the editors of *Scientific American*, *Simon and Schuster, New York*, 1955. 8 x 5½ in., 240 pp. Paper, \$1.00.

While not primarily devoted to natural history, the *Scientific American* frequently publishes articles in this field which admirably combine popular appeal with scientific restraint. Twenty-five of these articles are here reprinted in a pleasantly readable format. Ten of the selections deal with birds, seven with insects and spiders, the rest mainly with fishes and with mammals, including man. Among the writers included are such authorities as N. Tinbergen, David Lack, Donald Griffin, John H. Storer, and Oliver P. Pearson. This volume is part of a series; others now available deal with astronomy, physics and chemistry of life, atomic power, and automatic control.



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THE LONG VALLEY

Continued from Page 203

He and the coach are moving at the same speed. So it is with the bird in the wind except that the bird cannot, like the man, sit down or remain passive. It has to maintain its minimum speed for normal flight. But this it can do moving in any direction. It advances as though in a calm, as though it were in fact flying this way and that within the moving railway coach. There is no more pressure on it when it moves in one direction than when it heads in another. When flying in and out of winds the bird feels the changing pressures. But when it is in the heart of the moving air it has no more sensation of meeting the force of the gale when it flies in the direction from which it blows than a man has of feeling the weight of the train pushing against him when he walks back along the aisle. The bird can no more be struck by the wind than the man can be struck by the train on which he is riding. The moving mass of air in a wind carries the bird with it. It may sweep it far off its course. But it does not push against the bird. There is no pressure on it when it is riding with the moving air. It is being transported by the wind as the car transports its passengers. For the bird in the wind the whole sky is moving and it is moving with it and it flies as in air that is calm.

Looking down at the ridge below our Beechcraft Bonanza, winging its way back to Harrisburg, we saw the steady slide of the trees slipping to the rear. The rate of their movement, our speed over the ground, was an entirely different matter from our speed through the air. In ground speed—both for us and for the bird—the direction and force of the wind do play an important part.

If we may return for one last time to our old friend, the man on the mile-a-minute express: sitting still he is moving over the ground at 60 miles an hour. If he leaves his seat and walks ahead along the aisle at five miles an hour he is moving over the ground that much faster, or 65 miles an hour. If he turns and walks back along the aisle at the same pace he subtracts five miles from his speed over the ground, reducing it to 55 miles an hour. All the while the man himself in the coach is moving only five miles an hour. Similarly the bird

advances at its own speed within the "coach" of the moving wind. But its rate of progress *over the ground*—as opposed to its speed through the air—leaps ahead or lags behind according to the direction of its flight and the movement of the wind.

Twenty miles from Harrisburg we crossed the ridge for a final time and curved out over the far-famed fertile fields of the Lebanon Valley. Our shadow trailed across patches of tasseled corn that looked like shaggy rugs cut into squares and rectangles; over orchards with little rows of round twig masses seen in two dimensions; down the length of a pasture where a flock of crows, no larger than flakes of soot, trailed down to land among toy cattle, red and white and black. Once, far below us we sighted a green field strewn with a multitude of minute, white, elongated objects like kernels of rice. Only after we had flown past and looked back at an oblique angle did we see that the kernels were flocks of white hens feeding at a poultry farm.

Then the Roman aqueduct of the railroad bridge drew near, the red-and-green-roofed houses spread out below us, the dark flow of the Susquehanna passed beneath our wings and, with idling engine, we soared on and on to touch at last the long black strip of the runway. I looked back at the curve of the Endless Mountain. We had seen it from the viewpoint of the airborne hawk. Now its 1,000-foot wall reared against the sky—its normal aspect for human eyes. Later that same afternoon we were to see it from still a third point of view. On the Pennsylvania Turnpike, heading west toward the Ohio line, we watched the ridge expand upward into the air ahead of us. We saw it tower directly above us. Then in a rush its exterior disappeared to be supplanted by the mole's-eye view of a tunnel that burrowed through the solid rock of its base. When we emerged on the other side and sped on, the ancient pathway of the hawks, the Kittatinny Ridge, lay behind us. —THE END.

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Children's Books

By Dorothy Edwards Shuttlesworth



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AUDUBON AND HIS SONS (14 and up)

By Amy Hogeboom, Lothrop, Lee and Shepard Co., New York, 1956. 8½ x 5½ in., 210 pp. Illustrated with Audubon prints and drawings by Paul Galdone. \$3.00.

Many parents doubtless remember their own "discovery" of John James Audubon when they were teen-agers, and thrilled to the romance and adventure of his life. Little wonder he is a popular subject for biographers! His story can be told from many points of view, for his dedication to art was equalled by his intense personal relationships, and his genius as an artist was matched by his courage and fortitude. Miss Hogeboom's new book emphasizes the very important part the Audubon boys played in their father's career, and for this reason it is a perfect biography for young people. Johnny and Victor from early childhood believed in Audubon—and tried to help him. In later years John, junior, was a fine artist in his own right and Victor provided much-needed business management for the Audubon enterprises. But it is certain that the satisfaction of success they knew in later years never surpassed what they must have felt as youngsters when they surprised their father with a collection of sketches and birds they had stuffed. "Another good job!" Father Audubon exclaimed. "How could anyone fail with such helpers."

THE FEARLESS FAMILY (11 and up)

By Gardell Dano Christensen, Henry Holt and Co., New York, 1956. 8½ x 5¾ in., 160 pp. Illustrated by the author. \$2.75.

Mr. Christensen has long been known as an artist who portrays animals accurately yet with imagination and charm. It now appears he can do as well with the written word. The leading characters in his new book are members of the family Mustelidae which include a surprising variety: weasels, martens, minks, otters, skunks, badgers, and wolverines. "The Fearless Family" is comprised of a group of short stories, each concerning one member of this family. They are told with an excellent sense

of the dramatic and with humor, and are based on first-hand acquaintance by the author. Numerous line drawings illustrate the text, helping to bring alive these interesting and, in some cases, little known characters of field, meadow, river, and ocean.

EIGHT RINGS ON HIS TAIL (6-10)

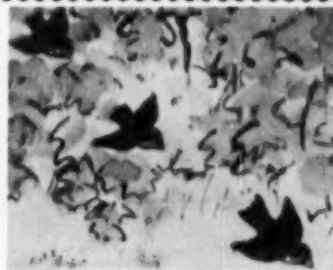
By John Oldrin, The Viking Press, New York, 1956. 10 x 6¾ in., 80 pp. Illustrated by Kurt Wiese. \$2.50.

As any child who has ever observed a raccoon knows, this is a creature full of curiosity and boundless energy. But Patches, the raccoon hero of "Eight Rings on His Tail," is more than usually inquisitive, independent, and adventurous. As the eight rings on his tail differed from the six on the tail of each of his sisters, so his life was destined to be filled with more excitement and fun than theirs. His adventures provide a delightful book. It is imaginative, often humorous, but everything that happens has reality. The pictures by Kurt Wiese are priceless.

THE STORY OF THE ICE AGE (12-16)

By Rose Wyler and Gerald Ames, Harper and Brothers, New York, 1956. 9¾ x 6¾ in., 82 pp. Pictures by Thomas Voter. \$2.50.

Here is a truly challenging book for young minds. The tremendous dramas that must have taken place when moving sheets of ice overran great areas that formerly had enjoyed a moderate climate are described in a lively, factual manner. The reader cannot help but be impressed by the struggle for survival that was waged and won by prehistoric man. He also finds interesting comparisons between life in the glacial age and life in the tundra region today, as well as some speculation on the future climate of the world. Will the ice sheets spread again? If so, could they be controlled by science—perhaps by atomic energy? And what would result if the earth's climate became warmer? With its excellent descriptions of how scientists traced the story of the long-vanished Ice Age and its projection of ideas into the future, this is a book of real scope.



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